

LUFKIN

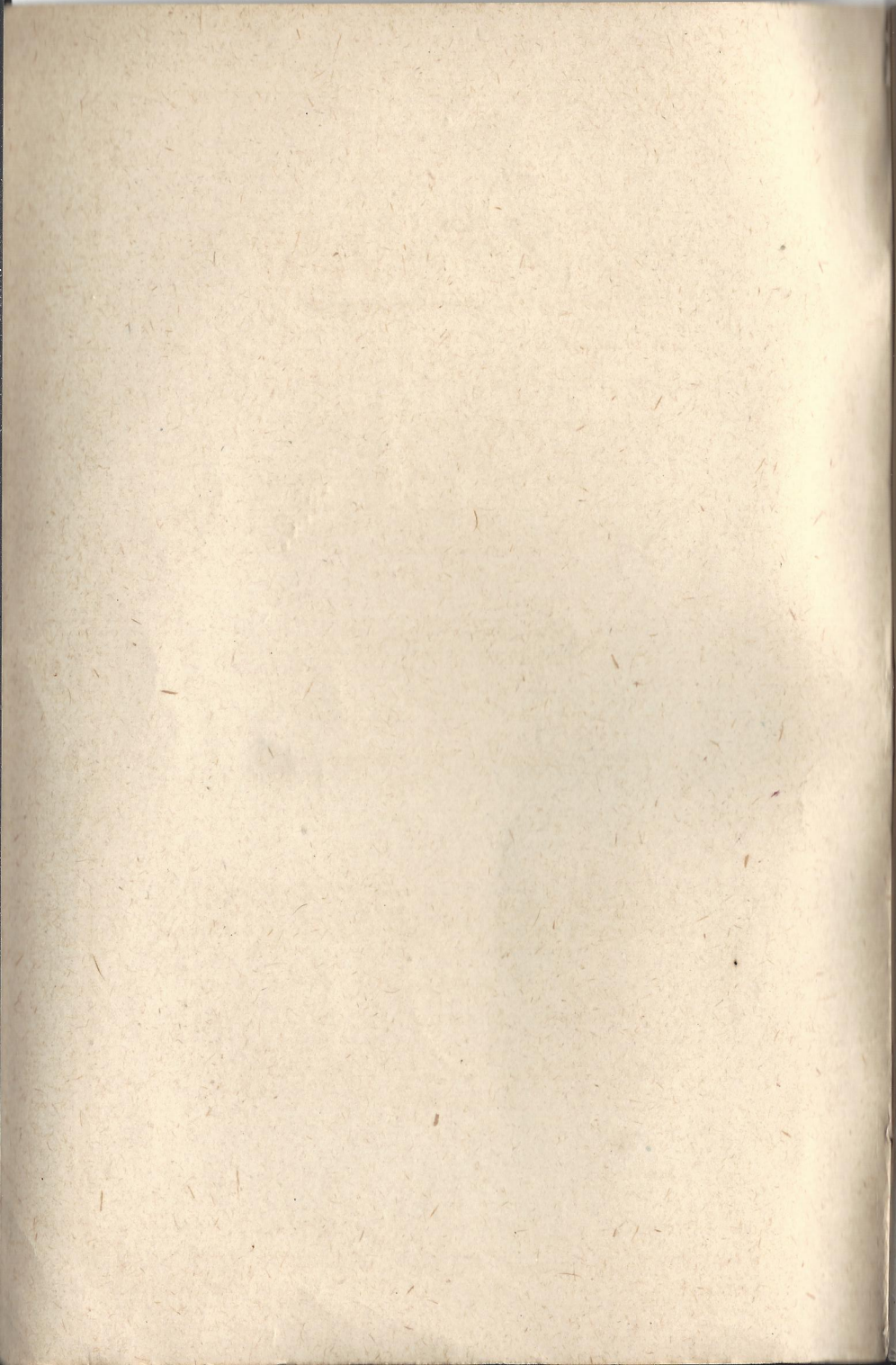
**PRECISION
TOOLS**

STANDARD
OF
ACCURACY

THE LUFKIN RULE CO.

SAGINAW, MICH., U.S.A.
PRECISION TOOL DIVISION

★ ★ CATALOG No. 7 ★ ★



LUFKIN

PRECISION TOOLS



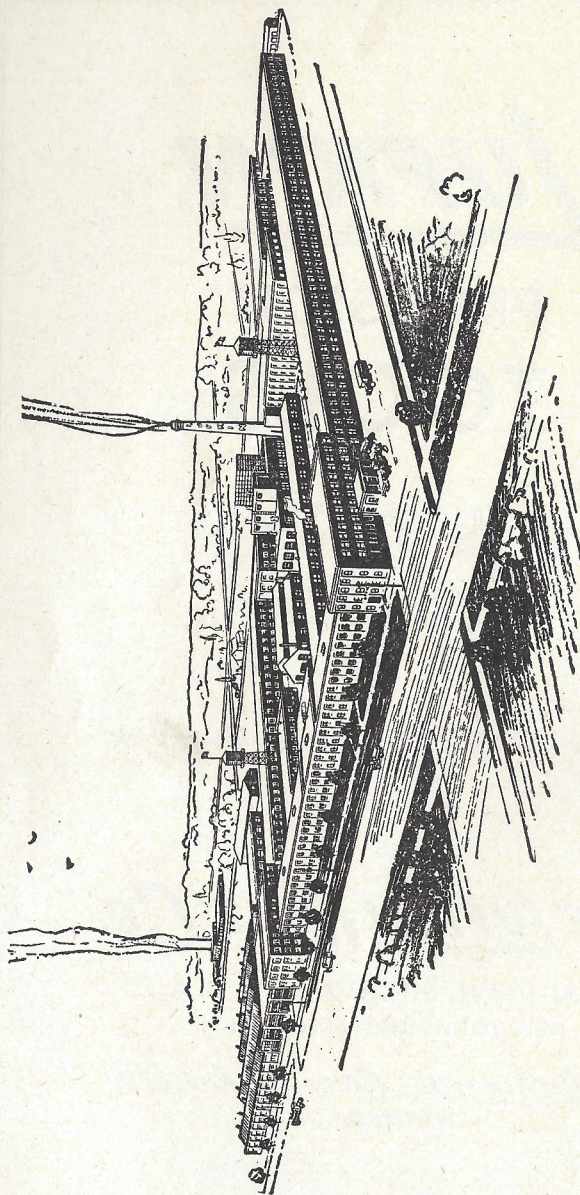
★ ★ CATALOG No. 7 ★ ★

THE LUFKIN RULE Co.

SAGINAW, MICHIGAN, U. S. A.

NEW YORK: 106-110 Lafayette St.

THE LUFKIN RULE Co. OF CANADA, LTD.
WINDSOR, ONT.



PLANT OF

THE LUFKIN RULE Co.
SAGINAW, MICHIGAN, U.S.A.

Introduction

This is our Precision Tool Catalog.

PRECISION Tools are the product of a separate division of our plant, in which we bring to the choice of materials and to the designing, manufacturing and inspecting of each tool that specialized knowledge and care which insure its superior quality.

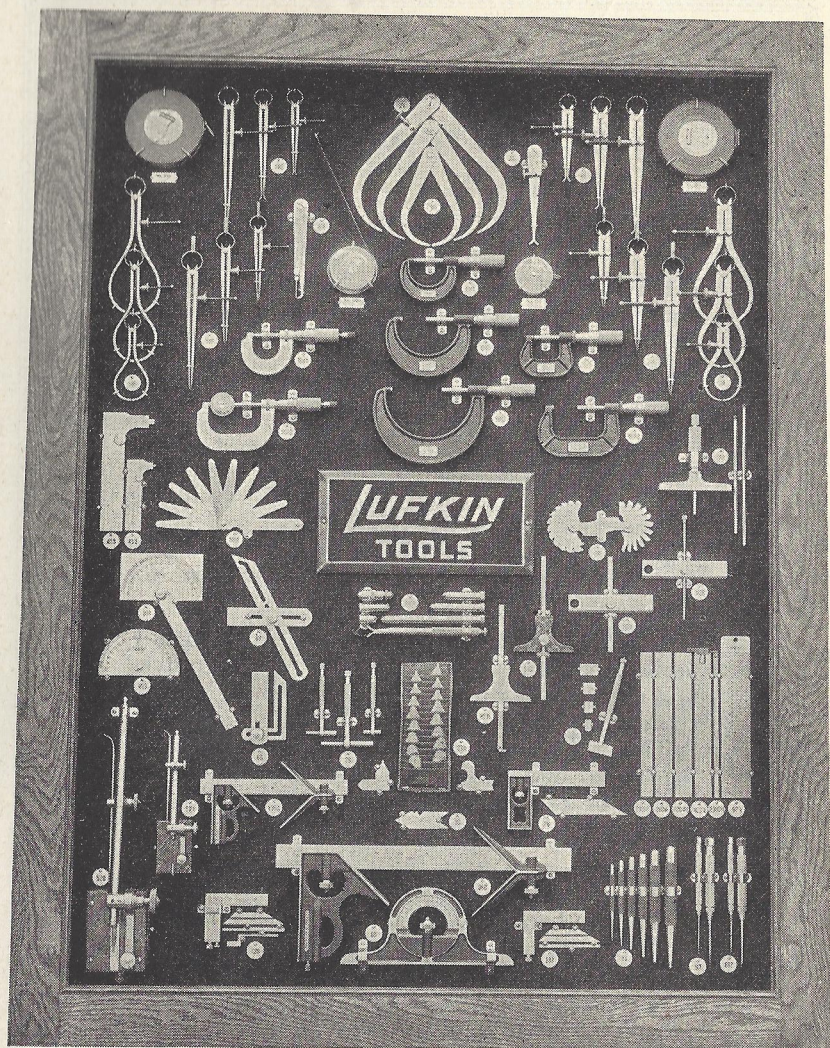
Our Precision Tool Division is, however, a unit under the same general management as the manufacture of our Measuring Tapes, etc. In building and marketing these Tools we are not only maintaining but extending the high reputation which our Measuring Tapes and Rules have borne for many years.

LUFKIN Tools are well designed and finished, but, more important, they have a number of improved and exclusive features that are a really great aid to mechanics.

Thus this Line has firmly won the favor of fine mechanics and established itself high among the leaders of its kind.

Our General Catalog No. 12 covers not only these Precision Tools but Measuring Tapes, Spring Joint, Boxwood and other Folding Rules, Miscellaneous Wood Rules, etc., detailed on page 107. It is gladly sent on request to the trade and to mechanics and others interested in our General Line.

THE LUFKIN RULE CO.



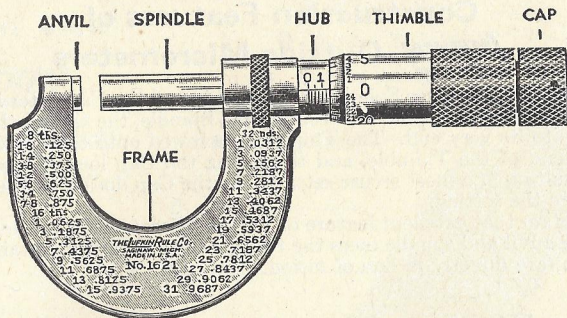
DISPLAY CASES and PANELS of PRECISION TOOLS

As an aid to Dealers we are pleased to mount our Tools in Display Cases or on Panels. We are prepared to build such fixtures to fit the wall or other space available. We also mount goods on fixtures sent us by the Dealer.

The Tools to appear in display may be selected by the Dealer to meet his requirements, or if desired we will make the selections. We gladly also make up Combination Displays of Precision Tools and Measuring Tapes and Rules. We nicely arrange and securely mount the items.

Cases can be furnished with hinged door fitted for glass and with lock, to keep the goods in best condition.

THESE MAKE PERMANENT DISPLAYS, PROMOTING SALES



General Description **LUFKIN** Micrometer Calipers

(Pages 8 to 32)

Valuable Features of These Micrometers

- Hardened Ground Thread. One-Piece Spindle.
- "Rapid Reading" (each thousandth numbered).
- Reading Lines Always Maintain Original Position.
- Simplicity of Construction. Ease of Adjustments.
- Rigid Reliable Durable

AS TO PATTERN, WE OFFER THREE TYPES OF MICROMETERS:

- (1) Full Finished Frame.
- (2) Enameled, Medium Weight, Ribbed Frame.
- (3) Enameled, Heavy, Ribbed Frame.

Directions for Reading **LUFKIN** Micrometer Calipers

To Read a Measurement to Thousandths Inch:

Read first the total of thousandths indicated by the lines on the hub (each of those lines represents 25) as .025, .050, .075, .100, .125, etc. To this add the intermediate thousandths, reading these directly off the sleeve, where each one, 1 to 24, is numbered.

Example, (per Cut to the left): Hub reading total is 150
Sleeve reading is 4
Total Measurement is .154 inch

To Read a Measurement to Ten-Thousandths of an Inch:

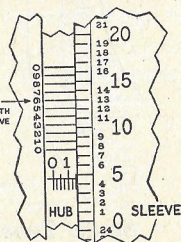
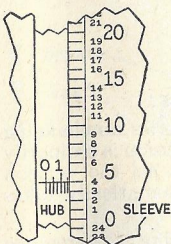
Measurements to ten-thousandths inch are obtained by using vernier graduations (a series of divisions on the hub of our Micrometer).

READING TO .154

Per Cut to the right, the hub bears ten of these division lines occupying the same space as nine divisions on the sleeve, and numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

To the reading on the hub add the reading on the sleeve, as detailed top of this page, this giving the total of full thousandths. To that add the reading of that line on the vernier which coincides with a line on the sleeve. If that be the line numbered 4, it means .0004, i.e., 4/10,000ths inch.

Example: Cut to the right shows total measurement .1546 inch. This is the grand total of 150 thousandths indicated on hub, plus 4 thousandths indicated on sleeve, plus 6 ten-thousandths indicated on vernier.



READING TO .1546

Construction Features of **LUFKIN** Outside Micrometers

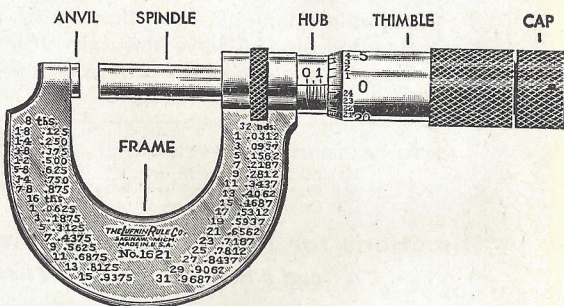
Three parts, the One-Piece Spindle, the Thimble and the Cap enter into the adjustment for wear on anvil and spindle faces. On the Spindle, the thread that engages the screw nut runs to its very end. The Thimble is screwed onto the Spindle. A chuck is formed on the end of the Thimble, and tightening the Cap locks Thimble to Spindle very firmly, resulting in a most secure setting. As the Cap does not touch the Spindle, it cannot change the setting.

Thus we retain that excellent feature of Lufkin Micrometers, i.e., even after grinding and lapping anvil and spindle faces the reading lines always maintain their original position, are directly in line of vision.

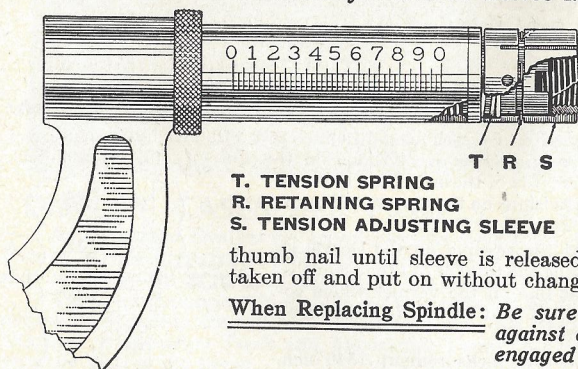
These Micrometers have Hardened and Ground Thread.
Every mechanic will recognize the great value of this.

Directions for Adjusting **LUFKIN** Micrometers for Wear on Faces of Anvil and Spindle

Loosen Cap with wrench. Grip Spindle and give Thimble about $\frac{1}{4}$ turn counter-clockwise. Then, by turning Thimble, bring Micrometer to the zero reading. By gripping Spindle, back it away from Anvil. Then test whether Micrometer is properly set. If so, grip Spindle and back it away from Anvil. Then grip Thimble only and tighten Cap with wrench.



Screw Tension of No. 1900 Series Micrometers:



- T. TENSION SPRING
- R. RETAINING SPRING
- S. TENSION ADJUSTING SLEEVE

thumb nail until sleeve is released. Sleeve and spring can be taken off and put on without changing adjustment.

When Replacing Spindle: Be sure tension nut is held firmly against end of hub until threads are engaged in frame.

On this Series no changing of screw tension is ordinarily necessary, as the tension spring automatically takes up wear.

For Cleaning: To remove tension adjusting sleeve "S" and tension spring "T," remove spindle, turn retaining spring "R" by pushing it with pin or

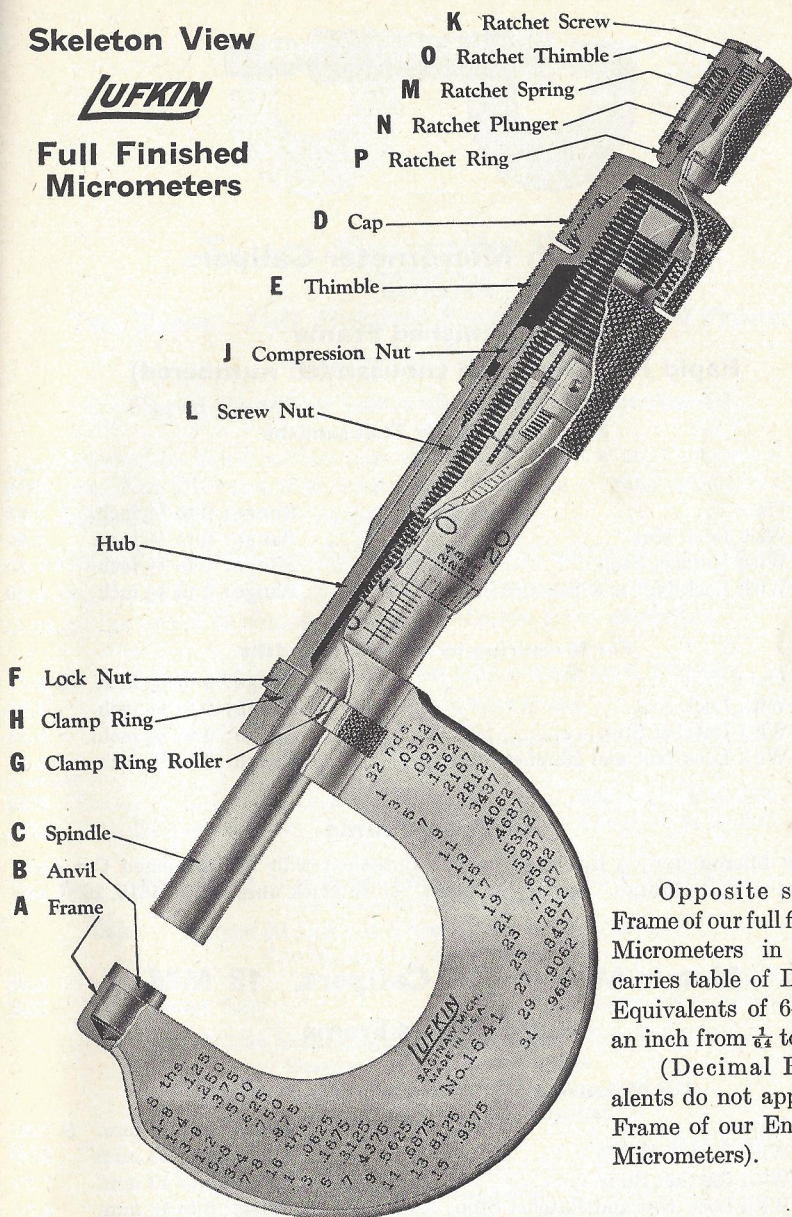
Screw Tension of All Micrometers Other Than No. 1900 Series:

To change this tension: With the wrench, adjust nut on end of hub.

Skeleton View

LUFKIN

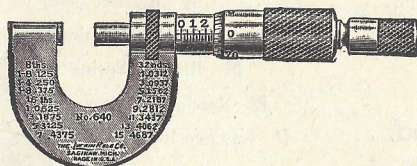
Full Finished Micrometers



Opposite side of Frame of our full finished Micrometers in inches carries table of Decimal Equivalents of 64ths of an inch from $\frac{1}{64}$ to $\frac{63}{64}$ ths.

(Decimal Equivalents do not appear on Frame of our Enameled Micrometers).

NOTE: A card, carrying this skeleton view enlarged, together with directions for adjusting these Micrometers, and bearing on reverse side a Table of Decimal Equivalents, we gladly send on request. Card is size $8\frac{1}{2} \times 11$ inches and equipped for hanging up. It is very handy in the tool crib, also for purposes of instruction at schools, etc.



Half-Inch Micrometer Calipers

(PATENTED)

Full Finished Frame

Rapid Reading (each thousandth numbered)

For Measuring by Thousandths

Number			Price Each
610	Plain.....	Range: 0 to $\frac{1}{2}$ inch.	\$ 7.00
620	With Lock Nut.....	Range: 0 to $\frac{1}{2}$ inch.	8.00
630	With Ratchet Stop.....	Range: 0 to $\frac{1}{2}$ inch.	7.50
640	With Lock Nut and Ratchet Stop.....	Range: 0 to $\frac{1}{2}$ inch.	8.50

For Measuring by Ten-thousandths

610V	Plain.....	Range: 0 to $\frac{1}{2}$ inch.	\$ 8.75
620V	With Lock Nut.....	Range: 0 to $\frac{1}{2}$ inch.	9.75
630V	With Ratchet Stop.....	Range: 0 to $\frac{1}{2}$ inch.	9.25
640V	With Lock Nut and Ratchet Stop.....	Range: 0 to $\frac{1}{2}$ inch.	10.25

Cut Away Frame

Any Micrometer on this page can be furnished with Full Finished Cut Away Frame at no extra charge. Specify by prefix "1" to stock number, as 1610, 1620, etc.

Metric Micrometer Calipers. 13 MM.

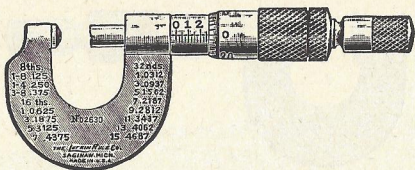
Full Finished Frame

For Measuring by Hundredths of a Millimeter

610M	Plain.....	Range: 0 to 13 mm.	\$ 7.00
620M	With Lock Nut.....	Range: 0 to 13 mm.	8.00
630M	With Ratchet Stop.....	Range: 0 to 13 mm.	7.50
640M	With Lock Nut and Ratchet Stop.....	Range: 0 to 13 mm.	8.50

Packing: One in a box. Weight each: 3 ounces

NOTE: Directions for Adjusting All Above Micrometers — See page 18.



Tubing Micrometer Calipers

(PATENTED)

Two Types: Full Finished Frame. Enameled Frame.

All Frames Cut Away

Rapid Reading (each thousandth numbered)

Micrometers listed on this page will accurately measure thickness of tubing walls, etc. Nos. 2610 and 2630 are suitable for tubing as small as $\frac{1}{16}$ inch (8 mm.); Nos. 2611 and 2631 down to $\frac{3}{8}$ inch ($9\frac{1}{2}$ mm.).

The end of anvil is rounded so it touches at only one point on the inside of tube; the end of spindle is flat so it touches at only one point on outside; thus giving exact thickness. Cut away frame gives clearance.

HALF-INCH MICROMETER CALIPERS FOR TUBING

Full Finished, Cut Away Frame

For Measuring by Thousandths

Number		Range:	Price Each
2610	Plain.....	0 to $\frac{1}{2}$ inch.	\$8.00
2630	With Ratchet Stop.....	0 to $\frac{1}{2}$ inch.	8.50

ONE-INCH MICROMETER CALIPERS FOR TUBING

Full Finished, Cut Away Frame

Hardened Ground Thread. One-Piece Spindle

For Measuring by Thousandths

2611	Plain.....	Range: 0 to 1 inch.	\$ 9.50
2631	With Ratchet Stop.....	Range: 0 to 1 inch.	10.00

ONE-INCH MICROMETER CALIPER FOR TUBING

Enameled, Heavy, Ribbed Frame

Hardened Ground Thread. One-Piece Spindle

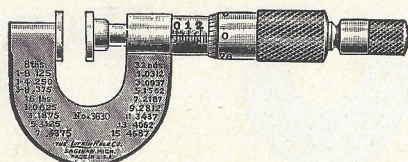
For Measuring by Thousandths

2911	Plain.....	Range: 0 to 1 inch.	\$7.25
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Packing: One in a box.

Weight each: $\frac{1}{2}$ -inch 3 ozs. 1-inch 7 ozs.

NOTES: Metric Tubing Micrometers—These in ranges 0 to 13 and 0 to 25 mm., can also be supplied. Prices same as corresponding $\frac{1}{2}$ and 1-inch sizes.



Paper Gage Micrometer Calipers. $\frac{3}{8}$ Inch.

(PATENTED)

Full Finished Frame

Rapid Reading (each thousandth numbered)

Designed for measuring the thickness of paper, sheet rubber, cardboard and other soft materials. The measuring surfaces being large, ($\frac{1}{16}$ inch in diameter), do not compress the material as much as the regular anvil and spindle, so measurements are taken more quickly and accurately.

Paper Gage Micrometers for Measuring by Thousandths

Number			Price Each
3610	Plain	Range: 0 to $\frac{3}{8}$ inch.	\$ 9.50
3630	With Ratchet Stop	Range: 0 to $\frac{3}{8}$ inch.	10.00

Metric Paper Gage Micrometer Calipers. 9 MM.

Full Finished Frame

These Micrometers have large measuring faces just as described above.

For Measuring by Hundredths of a Millimeter

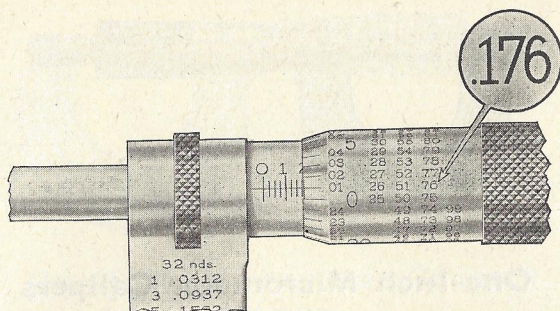
3610M	Plain	Range: 0 to 9 mm.	\$ 9.50
3630M	With Ratchet Stop	Range: 0 to 9 mm.	10.00

Finger Ring, attached to any of above Micrometers, furnished when specified.

Extra for Finger Ring 1.00

Packing: One in a box. Weight each: 3 ounces

NOTE: Directions for Adjusting All Above Micrometers — See page 18.



Direct Indicating One-Inch Micrometer Calipers

(PATENTED)

Full Finished, Cut Away Frame

Hardened Ground Thread. One-Piece Spindle

These Micrometers give the total reading of the measurement, avoiding additions which are always a chance for error. They have no complicated gears or counters. The total reading is shown at a glance by an ingenious arrangement of figures on the sleeve.

The hub markings are same as on regular type Micrometers: the hundreds of thousandths are indicated by long lines, numbered 0 to 9; the shorter, intermediate lines, which are in groups of three, indicate .025, .050 and .075 inch respectively. The sleeve is notched or cut away at the zero point so that at each revolution of the spindle a new line comes instantly into view when zero is reached. On the sleeve a row of figures from 0 to 24 is shown nearest the edge. To the right of that is a group of three rows of figures indicating 25 to 49, 50 to 74 and 75 to 99, so arranged in spiral form that each row carries into the next without jumping over.

Directions for Reading

Note on the hub the last line in view. If it is a long line, read in edge column on sleeve. If it is the first short line, read in first row of figures in the group of three. If the second short line shows, read in second row of the group of three; if third line, read in third row. Prefix to this reading the figure indicating hundreds of thousandths. You then have the full reading without any calculation, no chance of errors in addition as by the old method.

On these "Direct Indicating" Micrometers it is as simple as on any others to read measurement by the old method, and the new user of them may wish to so verify his first readings. Practice will soon convince him that this "Direct Indicating" method of reading is practical and positive, saves time and avoids errors.

Micrometer No. 1641V-DI will read to one ten-thousandths part of an inch. With it, the thousandths are read as detailed above, the ten-thousandths by using the vernier graduations on the hub in the manner described page 5.

For Measuring by Thousandths

Number
1641DI

With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.

Price
Each

\$11.00

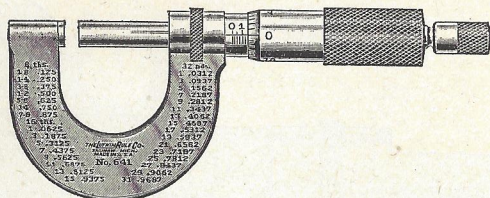
For Measuring by Ten-thousandths

1641V-DI

With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.

12.75

Packing: One in a box. Weight each: 7 ounces



One-Inch Micrometer Calipers

(PATENTED)

Full Finished Frame

Hardened Ground Thread. One-Piece Spindle
Rapid Reading (each thousandth numbered)

For Measuring by Thousandths

Number		Price Each
611	Plain.....Range: 0 to 1 inch.	\$ 8.50
621	With Lock Nut.....Range: 0 to 1 inch.	9.50
631	With Ratchet Stop.....Range: 0 to 1 inch.	9.00
641	With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.	10.00

For Measuring by Ten-thousandths

611V	Plain.....Range: 0 to 1 inch.	\$10.25
621V	With Lock Nut.....Range: 0 to 1 inch.	11.25
631V	With Ratchet Stop.....Range: 0 to 1 inch.	10.75
641V	With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.	11.75

Metric Micrometer Calipers. 25 MM.

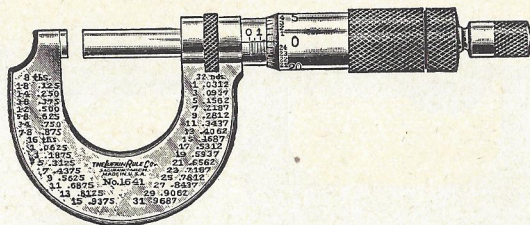
Full Finished Frame

Hardened Ground Thread. One-Piece Spindle

For Measuring by Hundredths of a Millimeter

611M	Plain.....Range: 0 to 25 mm.	\$ 8.50
621M	With Lock Nut.....Range: 0 to 25 mm.	9.50
631M	With Ratchet Stop.....Range: 0 to 25 mm.	9.00
641M	With Lock Nut and Ratchet Stop.....Range: 0 to 25 mm.	10.00

Packing: One in a box. Weight each: 7 ounces



One-Inch Micrometer Calipers

(PATENTED)

Full Finished, Cut Away Frame

Hardened Ground Thread. One-Piece Spindle

Rapid Reading (each thousandth numbered)

Having cut away frame, these Micrometers are suitable for taking many measurements where those without this feature could not be used. The combined depth of anvil and frame of these Micrometers is approximately $1\frac{1}{32}$ inch (9 mm.).

For Measuring by Thousandths

Number			Price Each
1611	Plain.....	Range: 0 to 1 inch.	\$ 8.50
1621	With Lock Nut.....	Range: 0 to 1 inch.	9.50
1631	With Ratchet Stop.....	Range: 0 to 1 inch.	9.00
1641	With Lock Nut and Ratchet Stop.....	Range: 0 to 1 inch.	10.00

For Measuring by Ten-thousandths

1611V	Plain.....	Range: 0 to 1 inch.	\$10.25
1621V	With Lock Nut.....	Range: 0 to 1 inch.	11.25
1631V	With Ratchet Stop.....	Range: 0 to 1 inch.	10.75
1641V	With Lock Nut and Ratchet Stop.....	Range: 0 to 1 inch.	11.75

Metric Micrometer Calipers. 25 MM.

Full Finished, Cut Away Frame

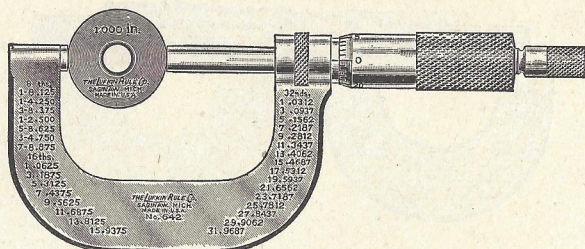
(As described above)

Hardened Ground Thread. One-Piece Spindle

For Measuring by Hundredths of a Millimeter

1611M	Plain.....	Range: 0 to 25 mm.	\$ 8.50
1621M	With Lock Nut.....	Range: 0 to 25 mm.	9.50
1631M	With Ratchet Stop.....	Range: 0 to 25 mm.	9.00
1641M	With Lock Nut and Ratchet Stop.....	Range: 0 to 25 mm.	10.00

Packing: One in a box. Weight each: 7 ounces



Two-Inch Micrometer Calipers

(PATENTED)

Full Finished Frame
Hardened Ground Thread. One-Piece Spindle
Rapid Reading (each thousandth numbered)

For Measuring by Thousandths

Number			Price Each
612	Plain.....	Range: 1 to 2 inches.	\$ 9.50
622	With Lock Nut.....	Range: 1 to 2 inches.	10.50
632	With Ratchet Stop.....	Range: 1 to 2 inches.	10.00
642	With Lock Nut and Ratchet Stop.....	Range: 1 to 2 inches.	11.00

For Measuring by Ten-thousandths

612V	Plain.....	Range: 1 to 2 inches.	\$11.25
622V	With Lock Nut.....	Range: 1 to 2 inches.	12.25
632V	With Ratchet Stop.....	Range: 1 to 2 inches.	11.75
642V	With Lock Nut and Ratchet Stop.....	Range: 1 to 2 inches.	12.75

One-inch test gage supplied with all above Micrometers

Metric Micrometer Calipers. 50 MM.

Full Finished Frame

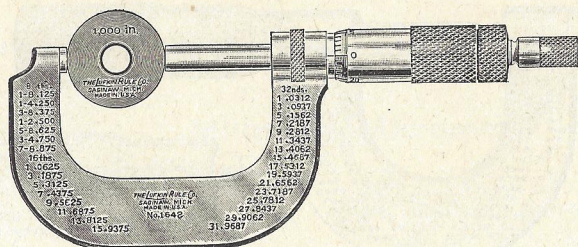
Hardened Ground Thread. One-Piece Spindle

For Measuring by Hundredths of a Millimeter

612M	Plain.....	Range: 25 to 50 mm.	\$ 9.50
622M	With Lock Nut.....	Range: 25 to 50 mm.	10.50
632M	With Ratchet Stop.....	Range: 25 to 50 mm.	10.00
642M	With Lock Nut and Ratchet Stop.....	Range: 25 to 50 mm.	11.00

25 mm. test gage supplied with all above Micrometers

Packing: One in a box. Weight each: 10 ounces



Two-Inch Micrometer Calipers

(PATENTED)

Full Finished, Cut Away Frame

Hardened Ground Thread. One-Piece Spindle

Rapid Reading (each thousandth numbered)

Having cut away frame, these Micrometers are suitable for taking many measurements where those without this feature could not be used. The combined depth of anvil and frame of these Micrometers is approximately $1\frac{1}{32}$ inch (9 mm.).

For Measuring by Thousandths

Number			Price Each
1612	Plain.....	Range: 1 to 2 inches.	\$ 9.50
1622	With Lock Nut.....	Range: 1 to 2 inches.	10.50
1632	With Ratchet Stop.....	Range: 1 to 2 inches.	10.00
1642	With Lock Nut and Ratchet Stop.....	Range: 1 to 2 inches.	11.00

For Measuring by Ten-thousandths

1612V	Plain.....	Range: 1 to 2 inches.	\$11.25
1622V	With Lock Nut.....	Range: 1 to 2 inches.	12.25
1632V	With Ratchet Stop.....	Range: 1 to 2 inches.	11.75
1642V	With Lock Nut and Ratchet Stop.....	Range: 1 to 2 inches.	12.75

One-inch test gage supplied with all above Micrometers

Metric Micrometer Calipers. 50 MM.

Full Finished, Cut Away Frame

(As described above)

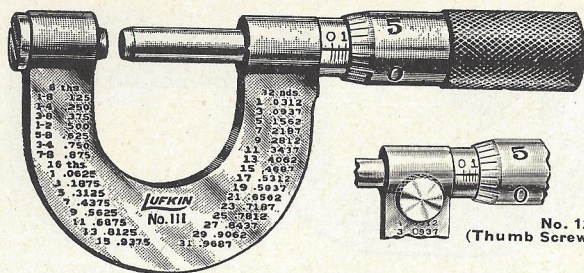
Hardened Ground Thread. One-Piece Spindle

For Measuring by Hundredths of a Millimeter

1612M	Plain.....	Range: 25 to 50 mm.	\$ 9.50
1622M	With Lock Nut.....	Range: 25 to 50 mm.	10.50
1632M	With Ratchet Stop.....	Range: 25 to 50 mm.	10.00
1642M	With Lock Nut and Ratchet Stop.....	Range: 25 to 50 mm.	11.00

25 mm. test gage supplied with all above Micrometers

Packing: One in a box. Weight each: 10 ounces



**Millmens Micrometers -- One-Inch
With Full Finished Frame
Hardened Ground Thread. One-Piece Spindle**

**Nos. 111 and 121
ARE THE IDEAL MILL MICROMETERS**
Specially Designed and Built for
Rapid Gaging of Hot or Cold Mill Sheets, etc.

These Micrometers Have the Following Outstanding Features:

Easy to read. Have large, heavy face figures and prominent graduations.

Slide most readily onto the work. Have long bevel on anvil and spindle.

Adjustment for wear is quick, simple and positive. It requires only a common screw driver and can be done right on the job. This adjustment is made in the anvil instead of the thimble. (For method, see below.)

Spindle is securely pinned to thimble.

Construction prevents any loosening of screw nut from effects of heat.

Anvil and spindle give extra long service, being of special analysis steel.
(Anvil can readily be replaced.)

Number 121 has thumb screw lock nut, with round, knurled head. On Nos. 111 and 121 the adjustment for wear on anvil and spindle faces is made in the anvil and the outer end screw serves both as protecting cap and anvil lock screw.

Method of This Adjustment:

With screw driver remove screw at outer end of frame. Turn spindle to zero.

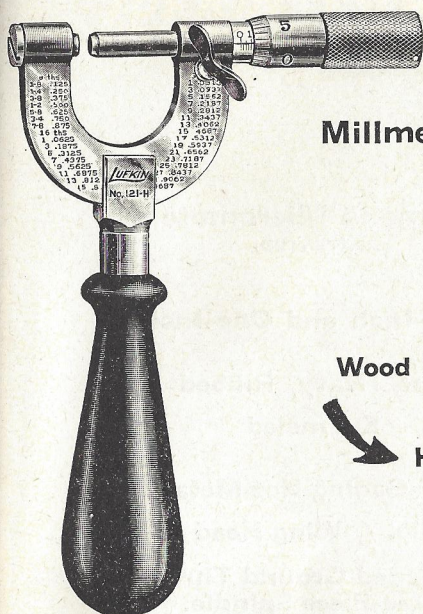
With screw driver turn adjustment screw until anvil contacts spindle. Micrometer is then in adjustment, with anvil securely set.

For Measuring by Thousandths

Number		Price, Each
111	Millmens Micrometer. Plain. Range: 0 to 1 inch.	\$8.50
121	Millmens Micrometer. With Thumb Screw Lock Nut. Range: 0 to 1 inch.	9.50

Packing: One in a box. Weight each: 7 ozs.

NOTE: Similar Micrometer With Wood Handle—See No. 121H, page 17.



Millmens Micrometer -- One-Inch

Full Finished Frame

For Gaging Hot Metal

Wood Handle. Wing Head Lock Nut.

Hardened Ground Thread.

One-Piece Spindle.

Designed for rapid gaging of mill sheets, etc., and used principally on hot metal, this Micrometer has:

Wood Handle, giving secure grip, safely away from the work.

Wing Head Lock Nut, easiest to grasp and lock firmly, even with gloved hand. Also releases quickly.

Anvil adjustment for wear, quick and positive, requiring only use of a common screwdriver.

Prominent figures and graduations.

Long bevel on anvil and spindle.

Spindle securely pinned to thimble.

Screw nut which will not loosen from effects of heat.

Method of Adjustment: With screw driver remove screw at outer end of frame. Turn spindle to zero. With screw driver turn adjustment screw until anvil contacts spindle. Micrometer is then in adjustment, with anvil securely set; end screw serves both as anvil lock screw and protecting cap.

For Measuring by Thousandths—Range: 0 to 1 inch

No. 121H Millmens Micrometer. Wood handle. Wing Head Lock Nut. Each \$12.00

NOTE: Similar Micrometer Without Wood Handle—No. 121, page 16.



Millmens Micrometers
(PATENTED)

Half-Inch and One-Inch

**With Extra Heavy, Ribbed Frame
Enameled**

For Gaging Hot Metal

Wood Handle. Wing Head Lock Nut.

**Hardened Ground Thread.
One-Piece Spindle.**

These are extra sturdy Micrometers, used principally in hot mills and suitable for this heavy duty.

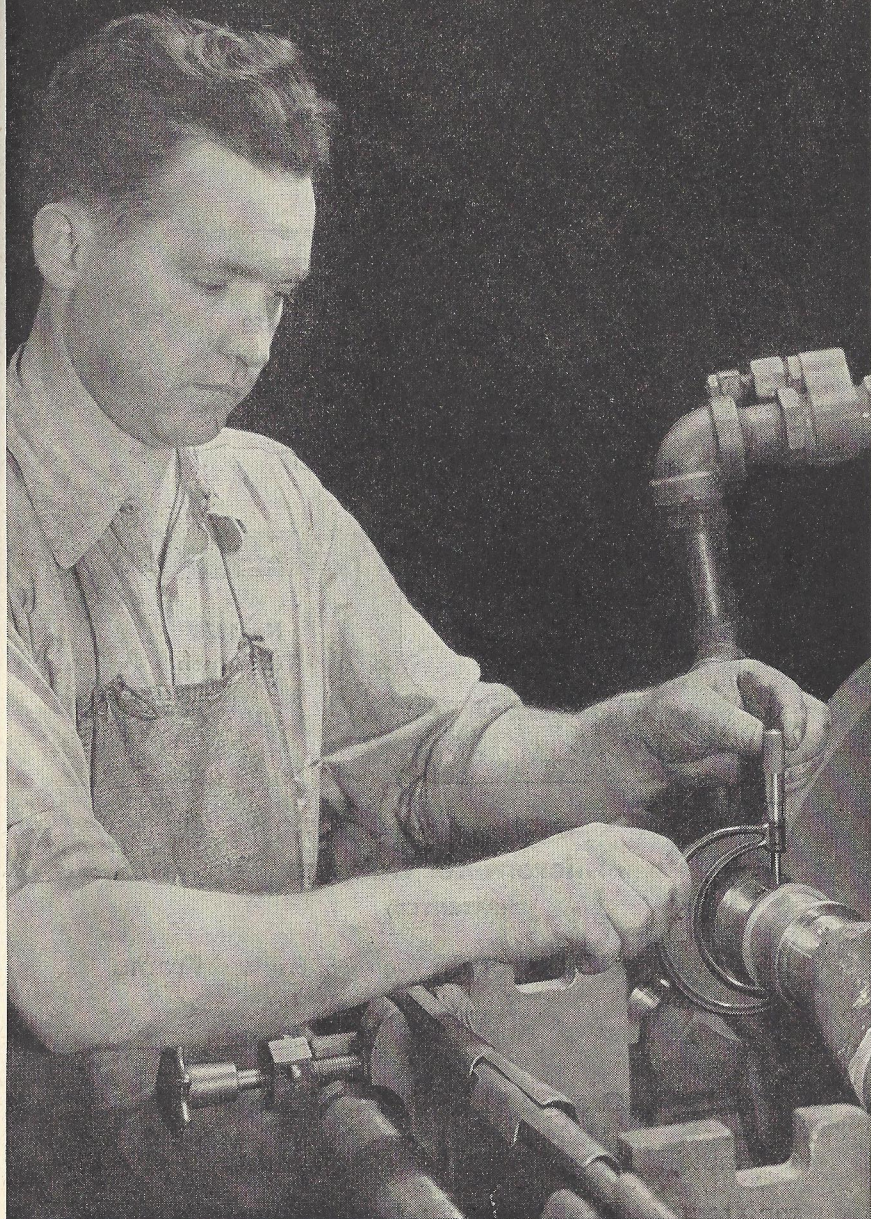
They have most rigid frame, spindle of greater diameter and throat deeper than standard type Micrometers. The ample size wood handle gives secure grip, safely away from the hot metal. Lock nut, having wing head, is easy to grasp even with gloved hand, locks firmly, locks and releases quickly. Anvil and spindle faces are beveled, more readily applied to the work. Figures and graduations are extra prominent, easy to read.

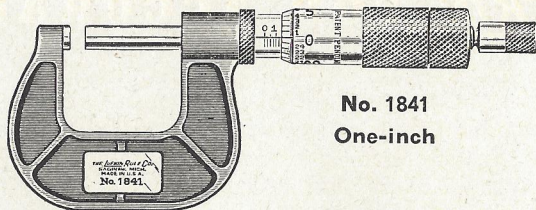
For Measuring By Thousandths

Number		Price, each
920BH	Millmens Micrometer. Wood Handle. Wing Head Lock Nut. .....Range: 0 to 1/2 inch	\$14.50
921BH	Millmens Micrometer. Wood Handle. Wing Head Lock Nut. .....Range: 0 to 1 inch	15.50

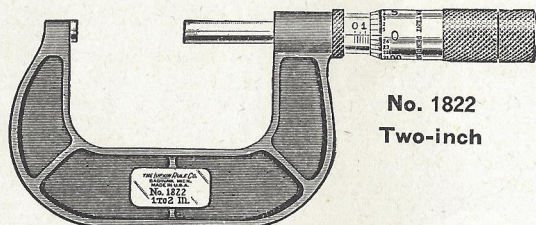
Packing: One in a box. Weight each: 920BH, 14 ozs., 921BH, 15 ozs.

LUFKIN FOR ACCURACY

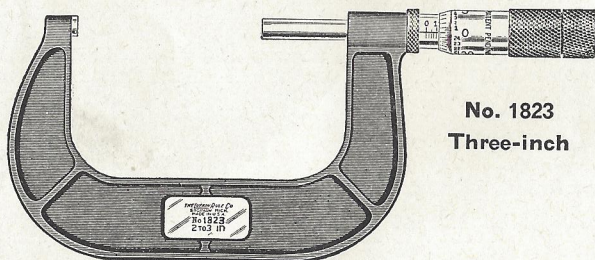




No. 1841
One-inch



No. 1822
Two-inch



No. 1823
Three-inch

Micrometer Calipers

(PATENTED)

With Enameled, Medium Weight, Ribbed Frame

One-inch.

Two-inch.

Three-inch.

➔ Hardened Ground Thread. One-Piece Spindle.

Rapid Reading (each thousandth numbered)

FOR LISTINGS AND FURTHER DESCRIPTION, SEE PAGE 19

Micrometer Calipers (Illustrated page 18)

(PATENTED)

One-inch. Two-inch. Three-inch.

Enameled, Medium Weight, Ribbed Frame

Hardened Ground Thread. One-Piece Spindle

Rapid Reading (each thousandth numbered)

These Micrometers have found a place with mechanics, and are a type especially popular with those in inspection work.

This is our intermediate line, priced the same as our heavy ribbed Micrometers, the 1900 Series shown pages 22 and 23, but with frame of somewhat lighter weight and different shape. These Micrometers have enameled frame, edge and cross ribbed, and the difference in shape is made clear by comparing illustrations pages 18 and 22. These have spindle of same diameter as our full finished Micrometers, and have the same smooth action, high degree of accuracy and improved adjustment features.

For Measuring by Thousandths

Number		One-inch Micrometers		Price Each
1811	Plain.....	Range: 0 to 1 inch.		\$ 6.25
1821	With Lock Nut.....	Range: 0 to 1 inch.		7.25
1831	With Ratchet Stop.....	Range: 0 to 1 inch.		6.75
1841	With Lock Nut and Ratchet Stop.....	Range: 0 to 1 inch.		7.75

Two-inch Micrometers

Two-inch Micrometers			
1812	Plain.....	Range: 1 to 2 inches.	\$ 7.00
1822	With Lock Nut.....	Range: 1 to 2 inches.	8.00
1832	With Ratchet Stop.....	Range: 1 to 2 inches.	7.50
1842	With Lock Nut and Ratchet Stop.....	Range: 1 to 2 inches.	8.50
Extra for 1-inch Test Gage. (Supplied only when ordered).....			1.00

Three-inch Micrometers

Three-inch Micrometers			
1813	Plain.....	Range: 2 to 3 inches.	\$ 7.75
1823	With Lock Nut.....	Range: 2 to 3 inches.	8.75
1833	With Ratchet Stop.....	Range: 2 to 3 inches.	8.25
1843	With Lock Nut and Ratchet Stop.....	Range: 2 to 3 inches.	9.25
Extra for 2-inch Test Gage. (Supplied only when ordered.).....			1.25

For Measuring by Ten-thousandths

Number		One-inch Micrometers		Price Each
1811V	Plain.....	Range: 0 to 1 inch.		\$ 8.00
1821V	With Lock Nut.....	Range: 0 to 1 inch.		9.00
1831V	With Ratchet Stop.....	Range: 0 to 1 inch.		8.50
1841V	With Lock Nut and Ratchet Stop.....	Range: 0 to 1 inch.		9.50

Two-inch Micrometers

1812V	Plain.....	Range: 1 to 2 inches.	\$ 8.75
1822V	With Lock Nut.....	Range: 1 to 2 inches.	9.75
1832V	With Ratchet Stop.....	Range: 1 to 2 inches.	9.25
1842V	With Lock Nut and Ratchet Stop.....	Range: 1 to 2 inches.	10.25
Extra for 1-inch Test Gage. (Supplied only when ordered.).....			1.00

Three-inch Micrometers

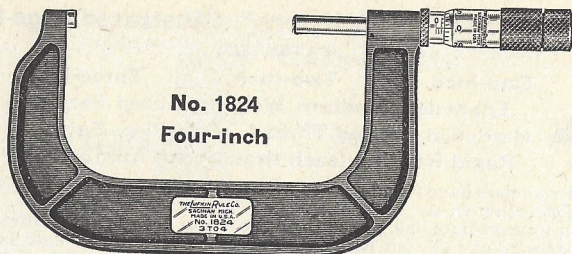
Three-inch instruments			
1813V	Plain.....	Range: 2 to 3 inches.	\$ 9.50
1823V	With Lock Nut.....	Range: 2 to 3 inches.	10.50
1833V	With Ratchet Stop.....	Range: 2 to 3 inches.	10.00
1843V	With Lock Nut and Ratchet Stop.....	Range: 2 to 3 inches.	11.00
Extra for 2-inch Test Gage. (Supplied only when ordered.).....			1.25

Packing: One in a box. Weight each: 1-inch 6 ozs. 2-inch 8 ozs. 3-inch 10 ozs.

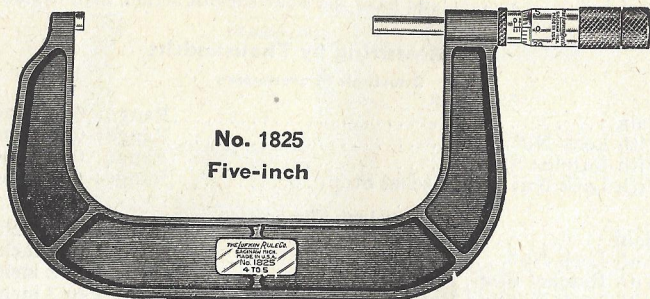
NOTES: Above Micrometers in 4, 5 and 6-inch Sizes.—See page 21.

Above Micrometers in Stainless Steel—See footnote page 25-B.

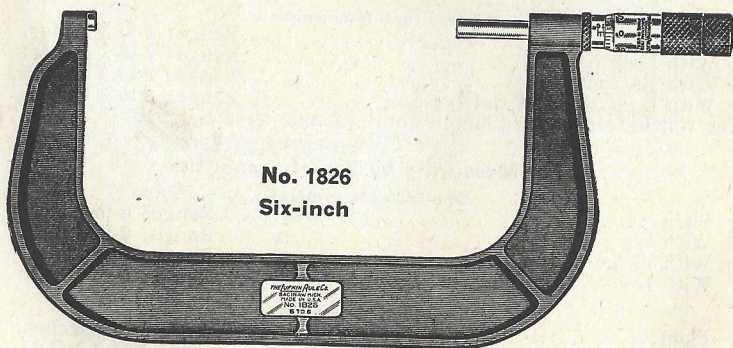
Metric Micrometers—Any above can also be supplied in metric, ranges 0 to 25, 25 to 50, and 50 to 75 mm. Prices same as corresponding 1, 2 and 3-inch. Specify by suffix "M" as "**1811M**," etc.



No. 1824
Four-inch



No. 1825
Five-inch



No. 1826
Six-inch

Micrometer Calipers

(PATENTED)

With Enameled, Medium Weight, Ribbed Frame

Four-inch.

Five-inch.

Six-inch.


Hardened Ground Thread. One-Piece Spindle.

Rapid Reading (each thousandth numbered)

FOR LISTINGS AND FURTHER DESCRIPTION, SEE PAGE 21

Micrometer Calipers (Illustrated page 20)

(PATENTED)


Four-inch. Five-inch. Six-inch.
Enamelled, Medium Weight, Ribbed Frame
Hardened Ground Thread. One-Piece Spindle
Rapid Reading (each thousandth numbered)

These Micrometers have found a place with mechanics, and are a type especially popular with those in inspection work.

This is our intermediate line, priced the same as our heavy ribbed Micrometers, the **1900** Series shown pages 22 and 23, but with frame of somewhat lighter weight and different shape. These Micrometers have enamelled frame, edge and cross ribbed, and the difference in shape is made clear by comparing illustrations pages 20 and 22. These have spindle of same diameter as our full finished Micrometers, and have the same smooth action, high degree of accuracy and improved adjustment features.

For Measuring by Thousandths

Four-inch Micrometers

Number		Price Each
1814	Plain.....Range: 3 to 4 inches.	\$ 8.50
1824	With Lock Nut.....Range: 3 to 4 inches.	9.50
1834	With Ratchet Stop.....Range: 3 to 4 inches.	9.00
1844	With Lock Nut and Ratchet Stop.....Range: 3 to 4 inches.	10.00
Extra for 3-inch Test Gage. (Supplied only when ordered.).....		1.50

Five-inch Micrometers

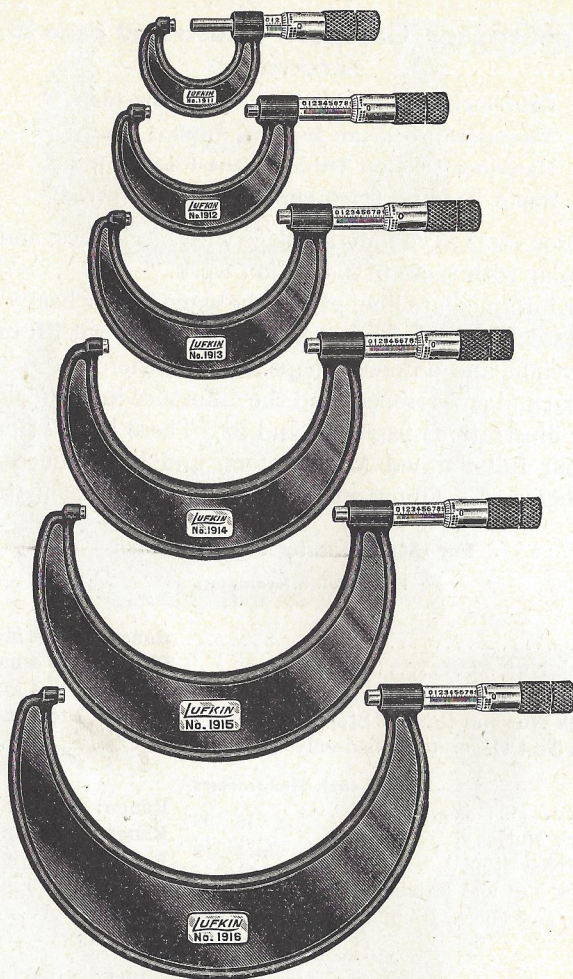
1815	Plain.....Range: 4 to 5 inches.	\$ 9.25
1825	With Lock Nut.....Range: 4 to 5 inches.	10.25
1835	With Ratchet Stop.....Range: 4 to 5 inches.	9.75
1845	With Lock Nut and Ratchet Stop.....Range: 4 to 5 inches.	10.75
Extra for 4-inch Test Gage. (Supplied only when ordered.).....		1.75

Six-inch Micrometers

1816	Plain.....Range: 5 to 6 inches.	\$10.00
1826	With Lock Nut.....Range: 5 to 6 inches.	11.00
1836	With Ratchet Stop.....Range: 5 to 6 inches.	10.50
1846	With Lock Nut and Ratchet Stop.....Range: 5 to 6 inches.	11.50
Extra for 5-inch Test Gage. (Supplied only when ordered.).....		2.00

Packing: One in a box
 Weight each: 4-inch 13 ozs. 5-inch 16 ozs. 6-inch 19 ozs

NOTES: Above Micrometers in 1, 2 and 3-inch Sizes—See page 19.
 Above Micrometers in Stainless Steel—See footnote page 25-B.
 Micrometers Measuring to Ten-thousandths Inch—Any of above can be so supplied at \$1.75 extra each. Specify by suffix "V" as "**1814V**," etc.
 Metric Micrometers—Any above can be supplied in metric, ranges 75 to 100, 100 to 125 and 125 to 150 MM. Prices same as corresponding 4, 5 and 6-inch. Specify by suffix "M" as "**1814M**," etc.



Micrometer Calipers

(PATENTED)

With Enameled, Heavy, Ribbed Frame

One-inch.

Two-inch.
Five-inch.

Three-inch.
Six-inch.

Four-inch.

Hardened Ground Thread. One-Piece Spindle
Rapid Reading (each thousandth numbered)

FOR LISTINGS AND FURTHER DESCRIPTION, SEE PAGE 23

Micrometer Calipers (Illustrated page 22)

(PATENTED)

**One-inch. Two-inch. Three-inch. Four-inch. Five-inch. Six-inch.
Hardened Ground Thread. One-Piece Spindle.**

Enameled, Heavy, Ribbed Frame. Rapid Reading (each thousandth numbered)

These are our heavy type, enameled, ribbed frame Micrometers, especially designed for production work. To withstand hard usage these have a very sturdy frame, yet they are not of excessive weight. They also have spindle of greater diameter and throat deeper than our other types. These have the same smooth action, high degree of accuracy, and improved adjustment features of all our Micrometers.

For Measuring by Thousandths

One-inch Micrometers

Number		Price Each
1911	Plain.....Range: 0 to 1 inch.	\$ 6.25
1921	With Lock Nut.....Range: 0 to 1 inch.	7.25
1931	With Ratchet Stop.....Range: 0 to 1 inch.	6.75
1941	With Lock Nut and Ratchet Stop.....Range: 0 to 1 inch.	7.75

Two-inch Micrometers

1912	Plain.....Range: 1 to 2 inches.	\$ 7.00
1922	With Lock Nut.....Range: 1 to 2 inches.	8.00
1932	With Ratchet Stop.....Range: 1 to 2 inches.	7.50
1942	With Lock Nut and Ratchet Stop.....Range: 1 to 2 inches.	8.50
Extra for 1-inch Test Gage. (Supplied only when ordered.)		1.00

Three-inch Micrometers

1913	Plain.....Range: 2 to 3 inches.	\$ 7.75
1923	With Lock Nut.....Range: 2 to 3 inches.	8.75
1933	With Ratchet Stop.....Range: 2 to 3 inches.	8.25
1943	With Lock Nut and Ratchet Stop.....Range: 2 to 3 inches.	9.25
Extra for 2-inch Test Gage. (Supplied only when ordered.)		1.25

Four-inch Micrometers

1914	Plain.....Range: 3 to 4 inches.	\$ 8.50
1924	With Lock Nut.....Range: 3 to 4 inches.	9.50
1934	With Ratchet Stop.....Range: 3 to 4 inches.	9.00
1944	With Lock Nut and Ratchet Stop.....Range: 3 to 4 inches.	10.00
Extra for 3-inch Test Gage. (Supplied only when ordered.)		1.50

Five-inch Micrometers

1915	Plain.....Range: 4 to 5 inches.	\$ 9.25
1925	With Lock Nut.....Range: 4 to 5 inches.	10.25
1935	With Ratchet Stop.....Range: 4 to 5 inches.	9.75
1945	With Lock Nut and Ratchet Stop.....Range: 4 to 5 inches.	10.75
Extra for 4-inch Test Gage. (Supplied only when ordered.)		1.75

Six-inch Micrometers

1916	Plain.....Range: 5 to 6 inches.	\$10.00
1926	With Lock Nut.....Range: 5 to 6 inches.	11.00
1936	With Ratchet Stop.....Range: 5 to 6 inches.	10.50
1946	With Lock Nut and Ratchet Stop.....Range: 5 to 6 inches.	11.50
Extra for 5-inch Test Gage. (Supplied only when ordered.)		2.00

Packing: One in a box

Weight each: 1, 2, 3, 4, 5 and 6-inch—7, 9, 12, 19, 22 and 27 ozs.

NOTES: Above Micrometers in 7 to 12-inch Sizes—See page 25.

Above Micrometers in Stainless Steel—See pages 25-A and 25-B.

Micrometers Measuring to Ten-thousandths Inch—Any of above can be so supplied at \$1.75 extra each. Specify by suffix "V" as "1941V," etc.

Metric—Above Micrometers can be supplied in Metric at prices same as corresponding sizes in inches. Specify by suffix "M" as "1911M," etc.

Micrometer Calipers

(PATENTED)

Seven-inch.

Eight-inch.
Eleven-inch.

Nine-inch.
Twelve-inch.

Ten-inch.

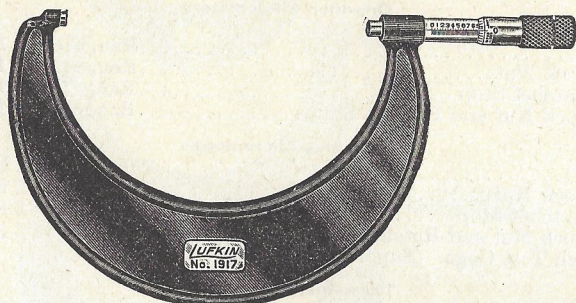
All Have

Enameled, Heavy, Ribbed Frame

Rapid Reading (each thousandth numbered)

Hardened Ground Thread. One-Piece Spindle

FOR LISTINGS AND FURTHER DESCRIPTION, SEE PAGE 25

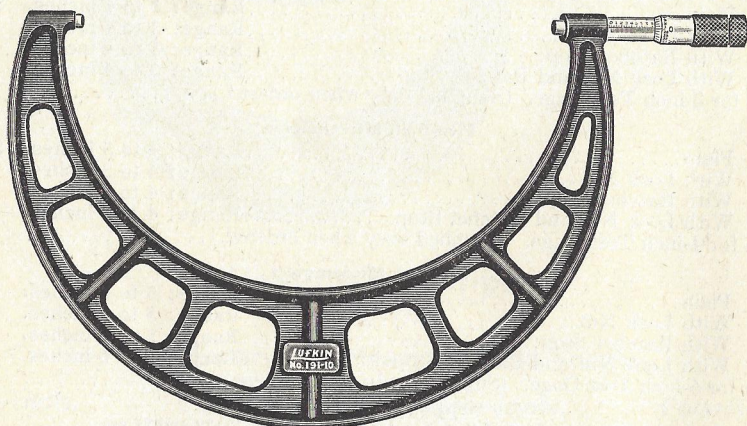


Seven, Eight and Nine-inch Micrometers

Nos. 1917 to 1929 Inclusive

Are of above Pattern

(Frame Not Perforated)



Ten, Eleven and Twelve-inch Micrometers

Nos. 191-10 to 192-12 Inclusive

Are of above Pattern

(Frame Perforated)

Micrometer Calipers (Illustrated page 24)

(PATENTED)

Seven-inch. Eight-inch. Nine-inch. Ten-inch. Eleven-inch. Twelve-inch.
Enameled, Heavy, Ribbed Frame

Hardened Ground Thread. One-Piece Spindle
Rapid Reading (each thousandth numbered)

These are our heavy type, enameled, ribbed frame Micrometers, especially designed for production work. To withstand hard usage these have a very sturdy frame, yet they are not of excessive weight (frames of the 10, 11 and 12-inch sizes are perforated as illustrated, this to save weight). All Micrometers listed on this page have spindle of extra diameter and have deep throat. These have the same smooth action, high degree of accuracy, and improved adjustment features of all our Micrometers.

For Measuring by Thousandths

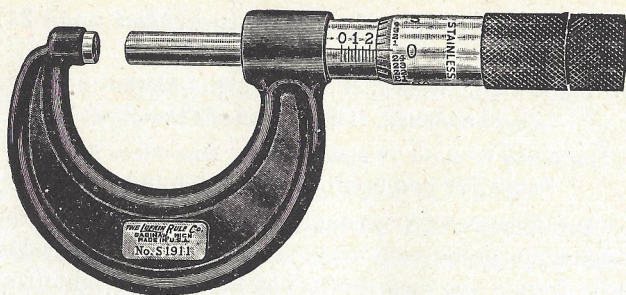
Seven-inch Micrometers			Price Each
1917	Plain.....	Range: 6 to 7 inches.	\$11.00
1927	With Lock Nut.....	Range: 6 to 7 inches.	12.00
Extra for 6-inch Test Gage. (Supplied only when ordered.).....			2.25
Eight-inch Micrometers			
1918	Plain.....	Range: 7 to 8 inches.	\$12.00
1928	With Lock Nut.....	Range: 7 to 8 inches.	13.00
Extra for 7-inch Test Gage. (Supplied only when ordered.).....			2.50
Nine-inch Micrometers			
1919	Plain.....	Range: 8 to 9 inches.	\$13.00
1929	With Lock Nut.....	Range: 8 to 9 inches.	14.00
Extra for 8-inch Test Gage. (Supplied only when ordered.).....			2.75
Ten-inch Micrometers			
191-10	Plain.....	Range: 9 to 10 inches.	\$14.00
192-10	With Lock Nut.....	Range: 9 to 10 inches.	15.00
Extra for 9-inch Test Gage. (Supplied only when ordered.).....			3.00
Eleven-inch Micrometers			
191-11	Plain.....	Range: 10 to 11 inches.	\$15.00
192-11	With Lock Nut.....	Range: 10 to 11 inches.	16.00
Extra for 10-inch Test Gage. (Supplied only when ordered.).....			3.25
Twelve-inch Micrometers			
191-12	Plain.....	Range: 11 to 12 inches.	\$16.00
192-12	With Lock Nut.....	Range: 11 to 12 inches.	17.00
Extra for 11-inch Test Gage. (Supplied only when ordered.).....			3.50
Ratchet Stop on Any of Above Micrometers, Extra.....			.50

Packing: One only in hinged wooden box with clasp
 Weight each: 7, 8, 9, 10, 11, and 12-inch. $3\frac{1}{2}$, $4\frac{1}{4}$, $5\frac{1}{4}$, $5\frac{3}{4}$, 7, $7\frac{3}{4}$ lbs.

NOTES: Above Type of Micrometers in 1 to 6-inch Sizes—See page 23.

Above Micrometers in Stainless Steel—See pages 25-A and 25-B.

Metric—Above Micrometers can be supplied in Metric at prices same as corresponding sizes in inches. Specify by suffix "M" as "1917M," etc.



Stainless Steel Micrometer Calipers

(PATENTED)

**Thimble, Sleeve and Hub Are Rust and Stain Proof,
Being of Stainless Steel.**

Enameled, Heavy, Ribbed Frame

Hardened Ground Thread. One-Piece Spindle

Rapid Reading (each thousandth numbered)

In Twelve Sizes, Giving Range 0 to 12 Inches

These are the popular, enameled type Micrometers for production work, exactly same as the **1900 Series**, pages 22 to 25, except having thimble, sleeve and hub of Genuine Stainless Steel. The stainless feature is very valuable in certain industries and under some climatic conditions, as it keeps the reading parts free of rust and stain, easy to read accurately, and prolongs the life of the tool.

In these, as in our other Micrometers, the anvil and spindle are of finest quality tool steel, properly hardened, wear resisting. The spindles are of greater diameter, and throats deeper than in our other types. The sturdy, ribbed frames withstand hard use, yet are not of excessive weight. In sizes from 0 to 9-inch the frames are of the type pictured above. In the 10, 11 and 12-inch sizes the frames are of the perforated pattern, illustrated bottom page 24.

These Micrometers have the same smooth action, high degree of accuracy, and improved adjustment features of our No. 1900 Series.

FOR LISTINGS SEE NEXT PAGE

Listings of

LUFKIN Stainless Steel Micrometer Calipers

(For Description see page 25-A)

**Hardened Ground Thread. One-Piece Spindle
For Measuring by Thousandths**



NUMBER			PRICE, EACH
One-inch Micrometers			
S-1911	Plain.....	Range: 0 to 1 inch.	\$ 7.25
S-1921	With Lock Nut.....	Range: 0 to 1 inch.	8.25
Two-inch Micrometers			
S-1912	Plain.....	Range: 1 to 2 inches.	\$ 8.00
S-1922	With Lock Nut.....	Range: 1 to 2 inches.	9.00
Three-inch Micrometers			
S-1913	Plain.....	Range: 2 to 3 inches.	\$ 8.75
S-1923	With Lock Nut.....	Range: 2 to 3 inches.	9.75
Four-inch Micrometers			
S-1914	Plain.....	Range: 3 to 4 inches.	\$ 9.50
S-1924	With Lock Nut.....	Range: 3 to 4 inches.	10.50
Five-inch Micrometers			
S-1915	Plain.....	Range: 4 to 5 inches.	\$10.25
S-1925	With Lock Nut.....	Range: 4 to 5 inches.	11.25
Six-inch Micrometers			
S-1916	Plain.....	Range: 5 to 6 inches.	\$11.00
S-1926	With Lock Nut.....	Range: 5 to 6 inches.	12.00
Seven-inch Micrometers			
S-1917	Plain.....	Range: 6 to 7 inches.	\$12.00
S-1927	With Lock Nut.....	Range: 6 to 7 inches.	13.00
Eight-inch Micrometers			
S-1918	Plain.....	Range: 7 to 8 inches.	\$13.00
S-1928	With Lock Nut.....	Range: 7 to 8 inches.	14.00
Nine-inch Micrometers			
S-1919	Plain.....	Range: 8 to 9 inches.	\$14.00
S-1929	With Lock Nut.....	Range: 8 to 9 inches.	15.00
Ten-inch Micrometers			
S-191-10	Plain.....	Range: 9 to 10 inches.	\$15.00
S-192-10	With Lock Nut.....	Range: 9 to 10 inches.	16.00
Eleven-inch Micrometers			
S-191-11	Plain.....	Range: 10 to 11 inches.	\$16.00
S-192-11	With Lock Nut.....	Range: 10 to 11 inches.	17.00
Twelve-inch Micrometers			
S-191-12	Plain.....	Range: 11 to 12 inches.	\$17.00
S-192-12	With Lock Nut.....	Range: 11 to 12 inches.	18.00
Ratchet Stop on Any of Above Micrometers, Extra.....			.50

Packing: One in a box

Weight each: 1, 2, 3, 4, 5 and 6-inch—7, 9, 12, 19, 22 and 27 ozs.

7, 8, 9, 10, 11 and 12-inch—3½, 4¼, 5¼, 5¾, 7, 7¾ lbs.

NOTES: Above Micrometers for Measuring to Ten-Thousandths Inch—Furnished in 1 to 6-inch sizes at \$1.75 extra each. Specify by suffix "V," as "S-1911V," etc.

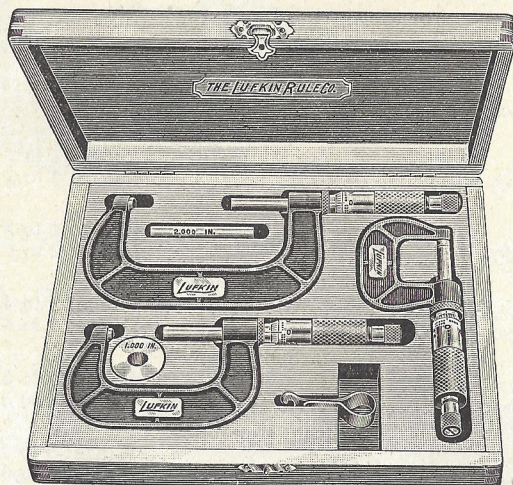
Test Gages for Above Micrometers—For prices see pages 23 and 25.

1800 Series Micrometers in Stainless Steel

These square type, medium weight, enameled frame Micrometers, in sizes 1 to 6-inch as shown pages 18 to 21, can also be furnished with stainless steel thimble, sleeve and hub. Prices exactly same as S-1900 Series shown above. Specify as "S-1811," etc.

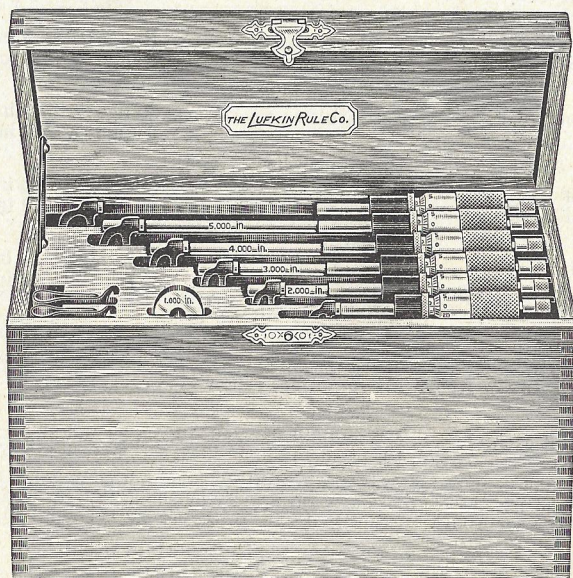
Micrometer Caliper Sets in Wood Cases

The Micrometer Caliper Sets listed on page 27, are supplied with Cases as here illustrated. These wood Cases are solidly built and well finished. They have hinged cover and clasp and they nicely accommodate the Micrometers and the Test Gages.



Set No. 184A. 0 to 3-inch

(Similar Case is supplied with the other 0 to 3-inch Sets)



Set No. 194C. 0 to 6-inch

(Similar Case is supplied with the other 0 to 6-inch Sets)

Micrometer Caliper Sets in Wood Cases

(Sets illustrated and cases described page 26)

All Have Hardened Ground Thread and One-Piece Spindle

All Have Rapid Reading (each thousandth numbered)

All Are for Measuring by Thousandths

0 to 3-inch Sets

Enameled, Medium Weight, Ribbed Frame

Set No.			Price, per Set	
			With Test Gages	Without Test Gages
181A	Plain.....	1811—1"; 1812—2"; 1813—3".	\$27.25	\$25.00
182A	With Lock Nut.....	1821—1"; 1822—2"; 1823—3".	30.25	28.00
183A	With Ratchet Stop.....	1831—1"; 1832—2"; 1833—3".	28.75	26.50
184A	With Lock and Ratchet.....	1841—1"; 1842—2"; 1843—3".	31.75	29.50

Further description of above Micrometers, page 19.

0 to 6-inch Sets

Enameled, Medium Weight, Ribbed Frame

181C	Plain.....	1811—1"; 1812—2"; 1813—3". 1814—4"; 1815—5"; 1816—6".	\$63.75	\$56.25
182C	With Lock Nut.....	1821—1"; 1822—2"; 1823—3". 1824—4"; 1825—5"; 1826—6".		
183C	With Ratchet Stop.....	1831—1"; 1832—2"; 1833—3". 1834—4"; 1835—5"; 1836—6".	69.75	62.25
184C	With Lock and Ratchet.....	1841—1"; 1842—2"; 1843—3". 1844—4"; 1845—5"; 1846—6".	66.75	59.25
			72.75	65.25

Further description of above Micrometers, pages 19 and 21.

0 to 3-inch Sets

Enameled, Heavy, Ribbed Frame

191A	Plain.....	1911—1"; 1912—2"; 1913—3".	\$27.25	\$25.00
192A	With Lock Nut.....	1921—1"; 1922—2"; 1923—3".	30.25	28.00
193A	With Ratchet Stop.....	1931—1"; 1932—2"; 1933—3".	28.75	26.50
194A	With Lock and Ratchet.....	1941—1"; 1942—2"; 1943—3".	31.75	29.50

Further description of above Micrometers, page 23.

0 to 6-inch Sets

Enameled, Heavy, Ribbed Frame

191C	Plain.....	1911—1"; 1912—2"; 1913—3". 1914—4"; 1915—5"; 1916—6".	\$63.75	\$56.25
192C	With Lock Nut.....	1921—1"; 1922—2"; 1923—3". 1924—4"; 1925—5"; 1926—6".		
193C	With Ratchet Stop.....	1931—1"; 1932—2"; 1933—3". 1934—4"; 1935—5"; 1936—6".	69.75	62.25
194C	With Lock and Ratchet.....	1941—1"; 1942—2"; 1943—3". 1944—4"; 1945—5"; 1946—6".	66.75	59.25
			72.75	65.25

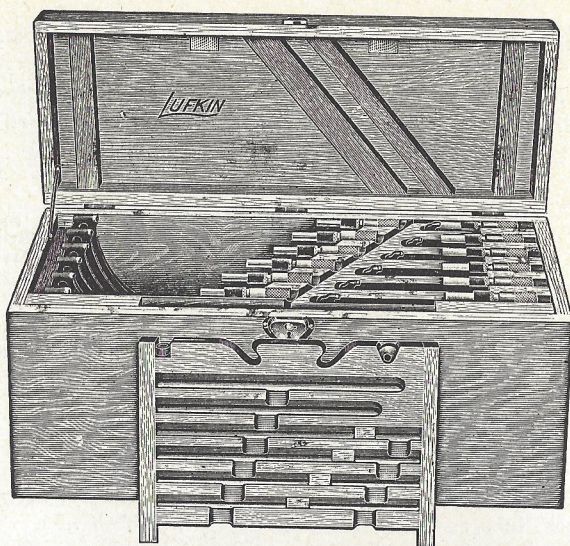
Further description of above Micrometers, page 23.

NOTES: Test Gages—Supplied with all above sets unless otherwise specified.

Micrometers Measuring to Ten-thousandths Inch—Any of the above sets can be so supplied at extra charge of \$5.25 on sets of three, \$10.50 on sets of six. Specify by suffix "V" as "Set No. 181V-A," etc.

Metric Micrometers—Any of above sets can be so supplied at price same as corresponding sets in inches. Specify by suffix "M" as "Set No. 181M-A," etc.

Other Sets of Micrometer Calipers—See page 28.



Micrometer Caliper Sets in Wood Cases

On this page are listed sets of larger Micrometers (6 to 12-inch); also larger sets (0 to 12-inch).

The case supplied with each of these sets is solidly built of oak, well finished, and fitted with a hinged cover and good lock. The test gage rack, also illustrated above, fits into a compartment in the front of the case.

All Have Enameled, Heavy, Ribbed Frame

All Have Hardened Ground Thread and One-Piece Spindle

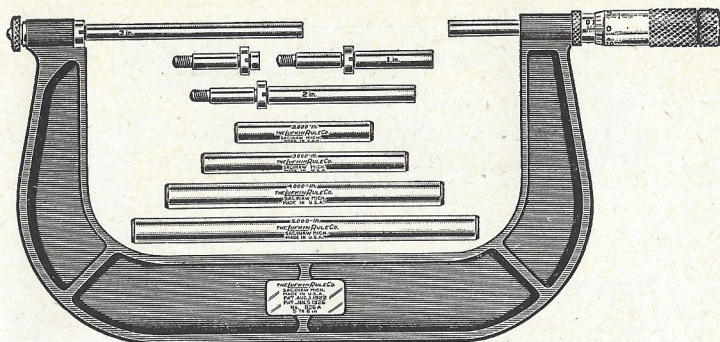
All Have Rapid Reading (each thousandth numbered)

All Are for Measuring by Thousandths

		Price, per Set	
Set No.		With Test Gages	Without Test Gages
6 to 12-inch Sets			
191D	Plain. 1917, 7"; 1918, 8"; 1919, 9"; 191-10, 10"; 191-11, 11"; 191-12, 12".....	\$104.25	\$ 87.00
192D	With Lock Nut. 1927, 7"; 1928, 8"; 1929, 9"; 192-10, 10"; 192-11, 11"; 192-12, 12".....	110.25	93.00
Ratchet Stop on above Micrometers.....		Extra per set. \$3.00	
0 to 12-inch Sets			
191E	Plain. 1911, 1"; 1912, 2"; 1913, 3"; 1914, 4"; 1915, 5"; 1916, 6"; 1917, 7"; 1918, 8"; 1919, 9"; 191-10, 10"; 191-11, 11"; 191-12, 12".....	\$164.00	\$139.25
192E	With Lock Nut. 1921, 1"; 1922, 2"; 1923, 3"; 1924, 4"; 1925, 5"; 1926, 6"; 1927, 7"; 1928, 8"; 1929, 9"; 192-10, 10"; 192-11, 11"; 192-12, 12".....	176.00	151.25
Ratchet Stop on above Micrometers....		Extra per set \$6.00	

For further description of Micrometers contained in Sets listed on this page, see pages 23 and 25.

NOTES: Test Gages—Supplied with all above sets unless otherwise specified.
Metric—Above Micrometers can be supplied in Metric at prices same as corresponding sets in inches. Specify by suffix "M" as "Set No. 191M-D," etc.
Other Sets of Micrometer Calipers—See page 27.



Micrometer Calipers with Interchangeable Anvils

(PATENTED)

0 to 4-inch.

1 to 4-inch.

2 to 6-inch.

Enameled, Medium Weight, Ribbed Frame

Hardened Ground Thread. One-Piece Spindle

Rapid Reading (each thousandth numbered)

These Micrometers are designed particularly for garage and machine shop work. They have a wide range of measurement, made possible by a set of interchangeable anvils. These anvils are quickly and easily changed and are securely held with a knurled nut. In addition to having our standard adjustment features, these Micrometers have each anvil equipped with an adjusting nut to maintain its individual length.

For Measuring by Thousandths

For Measuring by Thousandths			Price, Each	
Number			With Test Gages	Without Test Gages
0 to 4-inch Micrometers				
824AX	With Lock Nut	Range: 0 to 4 inch.	\$21.75	\$18.00
844AX	With Lock Nut and Ratchet Stop. .	Range: 0 to 4 inch.	22.25	18.50
1 to 4-inch Micrometers				
824A	With Lock Nut	Range: 1 to 4 inch.	\$20.75	\$17.00
844A	With Lock Nut and Ratchet Stop. .	Range: 1 to 4 inch.	21.25	17.50
2 to 6-inch Micrometers				
826A	With Lock Nut	Range: 2 to 6 inch.	\$26.50	\$20.00
846A	With Lock Nut and Ratchet Stop. .	Range: 2 to 6 inch.	27.00	20.50

Metric Micrometer Calipers with Interchangeable Anvils

25 to 100 MM.

50 to 150 MM.

Enameled, Medium Weight, Ribbed Frame

Hardened Ground Thread.

One-Piece Spindle

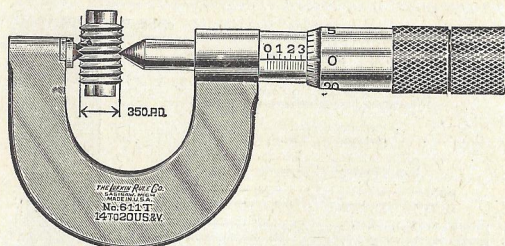
For Measuring by Hundredths of a Millimeter

824A-M	With Lock Nut.....	Range: 25 to 100 mm.	\$20.75	\$17.00
844A-M	With Lock Nut and Ratchet.....	Range: 25 to 100 mm.	21.25	17.50
826A-M	With Lock Nut.....	Range: 50 to 150 mm.	26.50	20.00
846A-M	With Lock Nut and Ratchet.....	Range: 50 to 150 mm.	27.00	20.50

Packing: One only in hinged wooden box with clasp

Weights: 22, 30 and 38 ozs. each, respectively

NOTES: Test Gages—Supplied with all above Micrometers unless otherwise specified.
Directions for Adjusting All Above Micrometers—See page 18.



Screw Thread Micrometer Calipers

(PATENTED)

One-inch.

Two-inch.

Full Finished Frame

Hardened Ground Thread. One-Piece Spindle

Rapid Reading (each thousandth numbered)

Screw Thread Micrometers are used for measuring screw threads on the Pitch Diameter. These are of the same general construction as our regular full finished Micrometers, and have the same improved adjustment features.

The spindle and anvil ends are shaped to conform to the standard angle of threads for which they are selected. At a direct reading these Micrometers give the Pitch Diameter, which equals the outside basic diameter less the depth of one thread. All are plain, i.e., without lock nut or ratchet stop.

Always Specify Range of Threads in Addition to Stock Number.

For Measuring by Thousandths

Number	Range of Threads Per Inch	Capacity	Form of Thread	Price Each
611T	8-13 Threads	1-inch	V or U. S. Standard	\$12.00
611T	14-20 Threads	1-inch	V or U. S. Standard	12.00
611T	22-30 Threads	1-inch	V or U. S. Standard	12.00
611T	32-40 Threads	1-inch	V or U. S. Standard	12.00
612T	4½-7 Threads	2-inch	V or U. S. Standard	14.50
612T	8-13 Threads	2-inch	V or U. S. Standard	14.50
612T	14-20 Threads	2-inch	V or U. S. Standard	14.50
612T	22-30 Threads	2-inch	V or U. S. Standard	14.50

Swivel Anvils are standard and regularly furnished with all above Micrometers.

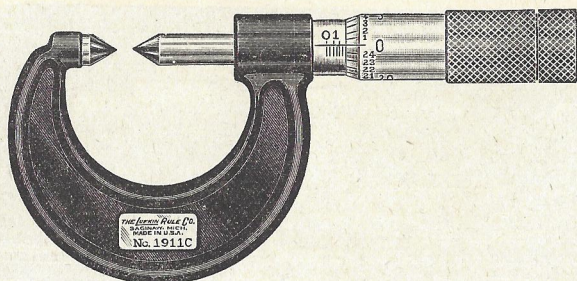
Fixed Anvils are supplied when specified; price the same.

Test Gage—A 1-inch Test Gage is furnished with each 2-inch Micrometer.

Tables of Pitch Diameters and Other Screw Thread Data—See Pages 115 to 118 and 122.

Packing: One in a box

Weight each: 1-inch 7 ozs.; 2-inch 10 ozs.



Thread Comparator Micrometer Caliper

(PATENTED)

Enamelled, Heavy, Ribbed Frame
Hardened Ground Thread. One-Piece Spindle
Rapid Reading (each thousandth numbered)

This Micrometer has many uses, although it will not measure the actual diameter of a V thread. It is especially suitable for making quick comparisons in cutting screw threads, also for measuring in small grooves or recesses where a regular Micrometer could not be used.

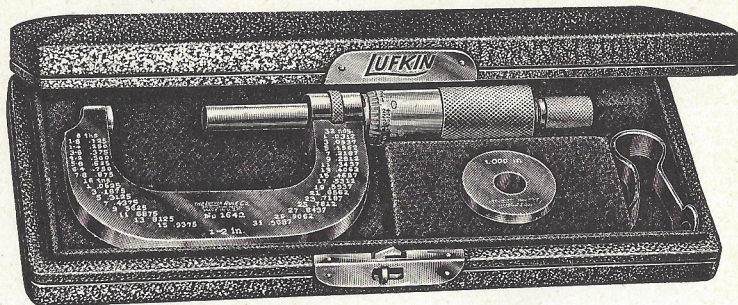
The anvil and spindle faces are conical, with points about $\frac{1}{64}$ th inch flat rather than sharp. The Micrometer is at zero when these points are in contact.

For Measuring by Thousandths

Number		Price, Each
1911C	Plain.....Range: 0 to $\frac{7}{8}$ inch.	\$7.00

Packing: One in a box.

Weight each: 7 ounces



Plush-Lined Leather Cases for Micrometer Calipers

These Cases are the best protection for Micrometers and present a very fine appearance. They exclude dust and grit and save the Micrometer also from scratches and all such damage as is due to its coming in contact with other tools, etc.

These Cases (or boxes) are covered with black, seal-grain, genuine leather. They are hinged and have slide clasp. The construction is rigid, edges square, and corners rounded. The inside is lined with black plush, and has compartments for the tool and its adjusting wrench. The 2-inch size has compartment also for test gage.

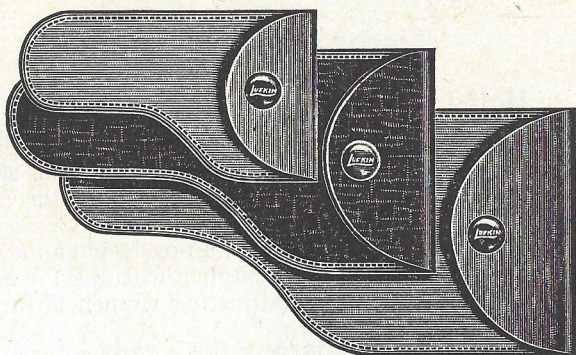
Always Specify Plush-Lined Case

Always Specify 1-inch or 2-inch

Plush-Lined Case for 1-inch Micrometers. Price, each **\$1.25**
(Accommodates all types)

Plush-Lined Case for 2-inch Micrometers. Price, each **1.60**
(Accommodates all types except heavy frame No. 1912 series)

Weight each: 1-inch 4 ozs.
2-inch 5 ozs.



Soft Leather Cases for Micrometer Calipers

These Soft Leather Cases are light weight and flexible. Therefore they are suitable for pocket use as well as for containing the tool when it is lying about. They protect it from dust, grit, etc., on the bench and in the pocket.

They have sewed edges and are equipped with snap fastener.

Always Specify Soft Leather Case

*Also Specify Type of Micrometer To Be Fitted
(On this point see note below)*

Soft Leather Case for Half-Inch Micrometers.....	Price, each	\$0.50
Soft Leather Case for One-Inch Micrometers.....	Price, each	.50
Soft Leather Case for Two-Inch Micrometers.....	Price, each	.50

NOTE:

"One-Inch" Case is made in two sizes:

One of these fits 600 and 1600 Series;
the other fits 1800 and 1900 Series Micrometers.

"Two-Inch" Case is made in two sizes:

One of these fits 600, 1600 and 1800 Series;
the other fits 1900 Series Micrometers.



Micrometer Heads

(PATENTED)

Half-inch.

One-inch.

Rapid Reading (each thousandth numbered)

These Heads are readily attached to machines, tools, special gages, etc., and are used where measurements with micrometer accuracy are required.

Our Micrometer Heads are adjustable, an exclusive and valuable feature. They have the same improved adjustment features, for wear, tension, etc., as our complete Micrometers. Adjusting wrench is furnished with each Head.

Half-inch Micrometer Heads

Number	For Measuring by Thousandths	Price Each
010	Plain..... Range: 0 to $\frac{1}{2}$ inch.	\$4.50
030	With Ratchet Stop..... Range: 0 to $\frac{1}{2}$ inch.	4.50
For Measuring by Ten-thousandths		
010V	Plain..... Range: 0 to $\frac{1}{2}$ inch.	\$6.25
030V	With Ratchet Stop..... Range: 0 to $\frac{1}{2}$ inch.	6.25

One-inch Micrometer Heads

Hardened Ground Thread. One-Piece Spindle

For Measuring by Thousandths

011	Plain..... Range: 0 to 1 inch.	\$5.50
031	With Ratchet Stop..... Range: 0 to 1 inch.	5.50

For Measuring by Ten-thousandths

011V	Plain..... Range: 0 to 1 inch.	\$7.25
031V	With Ratchet Stop..... Range: 0 to 1 inch.	7.25

Note: Lock Nut — Furnished when specified, and without extra charge, on 1-inch and 25-mm Micrometer Heads.

Metric Micrometer Heads

13 MM.

25 MM.

These Heads are metric, otherwise they are same as those above. They are adjustable and adjusting wrench is furnished with each one.

For Measuring by Hundredths of a Millimeter

010M	Plain..... Range: 0 to 13 mm.	\$4.50
030M	With Ratchet Stop..... Range: 0 to 13 mm.	4.50
011M	Plain..... Range: 0 to 25 mm.	5.50
031M	With Ratchet Stop..... Range: 0 to 25 mm.	5.50

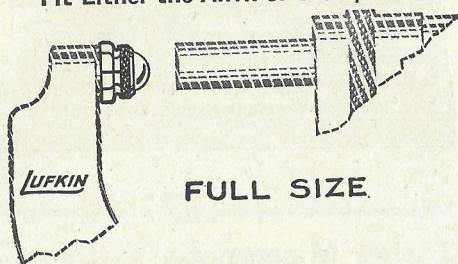
Length lower end of barrel to shoulder: On $\frac{1}{2}$ -inch and 13 mm., is $\frac{25}{64}$ ths inch (10 mm.).
On 1-inch and 25 mm., is $\frac{3}{4}$ ths inch (19 mm.).

Diameter of barrel on all above Micrometer Heads is $\frac{3}{8}$ inch (9.5 mm.).

Packing: One in a box

Ball Attachments for Micrometers

Fit Either the Anvil or the Spindle



These make any of our regular Micrometers suitable for measuring tubing walls, or other rounding surfaces. The Ball Attachment is readily applied and removed by the mechanic, and fitting either the anvil or the spindle, two of these Balls can be used together. Diameter of No. **16** and No. **19** Ball is .200 inch; so when used on standard Micrometers always subtract from reading .200 inch for each Ball used. Each Ball fits freely in its retainer, insuring contact with anvil or spindle. For quick identification the retainer of Ball No. **16** is bright, that of Ball No. **19** is mottled.

Ball No. **16** fits all our Micrometers of size one-inch and over excepting the No. **1900** Series (the heavy, ribbed frame type). In other words No. **16** fits all Micrometers having anvil and spindle of diameter .250 inch.

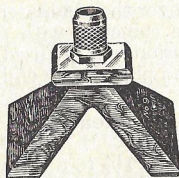
Ball No. **19** fits Micrometers of our No. **1900** Series (the heavy, ribbed frame type). It fits all Micrometers having anvil and spindle of diameter .270 inch.

Number	Price, Each
16 Ball Attachment	\$0.50
19 Ball Attachment .....	.50

Packing: Six in a box

Height Gage Attachment

(PATENTED)



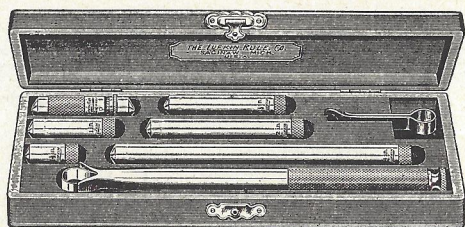
This Attachment, combined with our No. 680 Series Inside Micrometers, serves as a Micrometer Height Gage. It is very useful on jigs, fixtures and in machine construction work, suitable also for use in lining up shafting, etc.

Well proportioned, accurately grooved, hardened and has mottled finish. Has knurled chuck firmly holding Inside Micrometer Rod in place. Hole extends entirely through, permitting the Micrometer Rod to rest directly on any surface from which measurement is being taken, and essential when working on cylindrical objects.

Number	Price, Each
9A Height Gage Attachment	\$5.00

Packing: One in a box. Weight each: 12 ounces

NOTE: Inside Micrometers—See pages 34 and 35.



Inside Micrometer Calipers

(PATENTED)

Our Finest Line, Series No. 680

Valuable, Exclusive Features of the **LUFKIN** No. 680 Line are:

Micrometer Head will measure down as small as $1\frac{1}{2}$ inches.

Measuring Rods are light weight yet very rigid, being of steel tubing, rather than solid.

Measuring Rods can be added to either or both ends of micrometer head. Thus the head is kept central, where mechanic can get the feel most sensitively, adjust length most accurately, and it is also nearest in line of vision, easiest to read precisely.

(Illustration on next page demonstrates these advantages.)

Each Measuring Rod is adjustable for length.

Handle (shown in box above and furnished with Sets 680A, 680B and 6801D) also maintains that perfect balance so essential to accuracy, because it may be attached anywhere along the head or the extension rods.

Each measuring rod is marked with its length. Rods are attached to head by removing, with the frictional wrench supplied, the hardened end or anvil of the head. When these sets leave the factory each extension rod is adjusted to measure correctly overall with the head. Should the hardened caps of the head show wear, a method of adjustment is provided (slip the wrench over the graduated sleeve and rotate it in either direction in the thimble until zero line coincides with reading on the hub). As this would affect the measurement when extension rods are used, each rod is individually adjustable, by means of a hardened and ground plug at one end, which can be turned either into or out of the rod.

Inside Micrometer Calipers for Measuring by Thousandths of an Inch

Number		Price Each
680A	Inside Micrometer. Range: $1\frac{1}{2}$ to 8 inches. With 5 Measuring Rods. Movement of Screw: $\frac{1}{2}$ inch.....	\$12.00
680B	Inside Micrometer. Range: $1\frac{1}{2}$ to 12 inches. With 8 Measuring Rods. Movement of Screw: $\frac{1}{2}$ inch.....	15.00
681C	Inside Micrometer. Range: 4 to 24 inches. With 7 Measuring Rods. Movement of Screw: 1 inch.....	18.00
681D	Inside Micrometer. Range: 4 to 32 inches. With 8 Measuring Rods. Movement of Screw: 1 inch.....	20.00
681K	Inside Micrometer. Range: 4 to 40 inches. With 10 Measuring Rods. Movement of Screw: 1 inch.....	24.00
6801D	Inside Micrometer. Range: $1\frac{1}{2}$ to 32 inches. With 10 Measuring Rods. Movement of Screw: $\frac{1}{2}$ and 1 inch (two heads).....	30.00

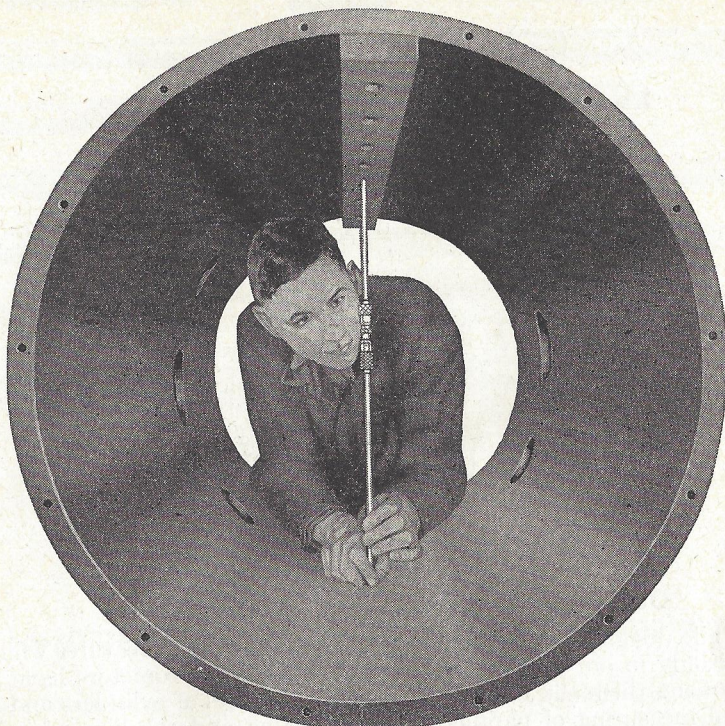
Packing: Each Set in nicely finished wooden box as illustrated above.

Weight each: 8 $\frac{1}{2}$, 12, 27, 39, 48 and 56 ounces respectively

Extra Extension Rods, to increase the range of a Set, can be supplied.

Corresponding Metric Inside Micrometers—See Page 35.

Inside Micrometer Calipers (Continued)



Checking Inside Diameter of 30-Inch Cylinder Liner for a Marine Diesel Engine
 Using Inside Micrometer Number **681D**, built up with extension rod at both ends. Note that Micrometer Head is central, where it is easiest to get proper feel and to adjust Micrometer to size, and that reading point is directly in the line of vision where it is easiest to see and to read closely.

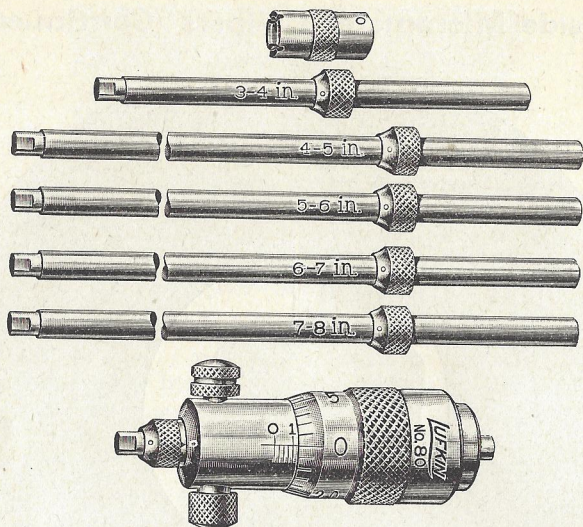
Metric Inside Micrometer Calipers

For General Description, See Page 34

For Measuring by Hundredths of a Millimeter

Number		Price Each
680A-M	Inside Micrometer. Range: 40 to 200 mm. With 6 Measuring Rods. Movement of Screw: 13 mm.....	\$12.00
680B-M	Inside Micrometer. Range: 40 to 300 mm. With 8 Measuring Rods. Movement of Screw: 13 mm.....	15.00
681C-M	Inside Micrometer. Range: 100 to 600 mm. With 7 Measuring Rods. Movement of Screw: 25 mm.....	18.00
681D-M	Inside Micrometer. Range: 100 to 800 mm. With 8 Measuring Rods. Movement of Screw: 25 mm.....	20.00
681K-M	Inside Micrometer. Range: 100 to 1000 mm. With 10 Measuring Rods. Movement of Screw: 25 mm.....	24.00
6801D-M	Inside Micrometer. Range: 40 to 800 mm. With 10 Measuring Rods. Movement of Screw: 13 and 25 mm. (two heads).....	30.00

Packing: Each Set in nicely finished wooden box.
 Weight each: 8½, 12, 27, 39, 48 and 56 ounces respectively.



No. 80A

Inside Micrometer Calipers

(PATENTED)

Our Popular Priced Line, Series No. 80

While designed for mechanics not requiring various features which are offered only in our No. 680 Series, these Inside Micrometers have many uses, among them the taking of internal diameters of cylinders and rings, internal measuring of parallel surfaces, setting and checking of calipers, comparing gages, etc.

On all these Micrometers the range is obtained by use of extension rods and the collars detailed below. Each rod is marked with the range of the Micrometer when used with that rod. Example: With the 3 to 4 inch rod the movement allows measurements from 3 to $3\frac{1}{2}$ inches. Adding the $\frac{1}{2}$ inch collar increases the range with that same rod from $3\frac{1}{2}$ to 4 inches. Use of collars applies to all extension rods. The zero mark on head, collar and rod should be in alignment in assembling the tool for use. When assembled, the shoulder on the rod fits firmly against the head or collar. Provision is made for adjusting tension and taking up wear on the screw. Contact points of the rods are adjustable for maintaining their individual lengths. All contact points are hardened and ground.

In No. 81C, which has the large range, (8 to 32 inches), the extension rods instead of being $\frac{5}{32}$ inch solid, are of $\frac{5}{16}$ inch steel tubing, making this Micrometer, even when fully extended, extra rigid yet of moderate weight.

In Nos. 80A and 80B, a Handle (furnished as an extra and only when specified) can be inserted in the head by removing the knurled screw opposite the knurled and grooved extension rod lock screw.

FOR LISTINGS SEE NEXT PAGE



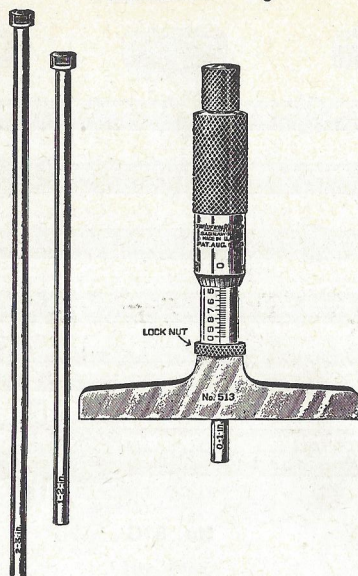
(For description see page 35-A)

Inside Micrometer Calipers for Measuring by Thousandths of an Inch

Number		Price, each
80A	Inside Micrometer. Range: 2 to 8 inches.	
	With 6 rods and $\frac{1}{2}$ inch collar. Movement of Screw: $\frac{1}{2}$ inch.....	\$7.25
	Plush-lined Case for above. (Supplied only when ordered).....	1.75
	Handle for above..... (Supplied only when ordered).....	.75
80B	Inside Micrometer. Range: 2 to 12 inches.	
	With 10 rods and $\frac{1}{2}$ inch collar. Movement of Screw: $\frac{1}{2}$ inch.....	8.50
	Plush-lined Case for above. (Supplied only when ordered).....	2.75
	Handle for above..... (Supplied only when ordered).....	.75
81C	Inside Micrometer. Range: 8 to 32 inches.	
	With 4 rods and one 1-inch and two 2-inch collars.	
	Movement of Screw: 1 inch.....	10.25
	Plush-lined Case for above. (Supplied only when ordered).....	4.00
81D	Inside Micrometer. Range: 2 to 32 inches.	
	Consists of Micrometers 80A and 81C'.....	17.50
	Plush-lined Case for above. (Supplied only when ordered).....	5.00
	Handle for above..... (Supplied only when ordered).....	.75

Weight each: 80A, 5 ozs.; 80B, 8 ozs.; 81C, 1½ lbs.; 81D, 1¾ lbs.

Packing: One Set in a box.



Micrometer Depth Gages (PATENTED)

Oblong Base—3-inch—5-inch. Lock Nut. One-inch Movement. Rapid Reading (each thousandth numbered)

Designed for measuring the depth of holes, slots, etc., with micrometer accuracy. Each Gage is provided with three rods, which permit measurements from zero to three inches by thousandths. Rods are approximately $\frac{5}{32}$ inch in diameter.

The rods are inserted through a hole in the screw and are securely fastened by means of a knurled cap. To compensate for wear, each rod is equipped with an adjusting nut to maintain its individual length. The end of each rod is hardened and lapped.

Both the 3-inch and the 5-inch base are hardened and ground, are $\frac{15}{32}$ inch wide, and have knurled surface on top at both sides of head, affording the firm hold essential for accurate measurements.

An exclusive feature in our Micrometer Depth Gages is the patent lock nut locking the rod at any point, permitting the reading to be maintained.

For Measuring by Thousandths of an Inch

Number			Price, Each
513	Micrometer Depth Gage	3-inch Base. Range: 0 to 3 inch.	\$10.50
515	Micrometer Depth Gage	5-inch Base. Range: 0 to 3 inch.	13.50

For Measuring by Hundredths of a Millimeter

513M Metric Micrometer Depth Gage. .3-inch Base. Range: 0 to 75 mm. \$10.50

Ratchet Stop—Supplied on any above when ordered. Extra each.50

Packing: One in hinged wooden box with clasp. Wt. Each: No. 513.12 oz. No. 515.18 oz.

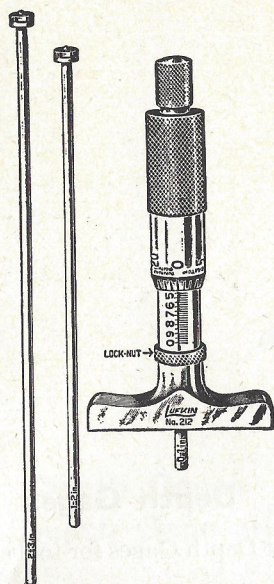
Extra Rods for Micrometer Depth Gages Nos. 513 and 515

3 to 4 inch Rod. .Each \$1.50 4 to 5 inch Rod. .Each \$1.60 5 to 6 inch Rod. .Each \$1.70

NOTE: To give Range 0 to 6 inch, both Nos. 513 and 515 can be furnished with the 3 additional rods detailed immediately above. When wanted, Specify 0 to 6 inch.

These large sets complete are also packed in hinged wooden box with clasp.

No. (513	0 to 6 inch)	\$15.80 each
No. (515	0 to 6 inch)	18.80 each



Micrometer Depth Gauge (PATENTED)

Oblong Base, 2-inch. Lock Nut. One-inch Movement.
Rapid Reading (each thousandth numbered)

This Micrometer Depth Gauge is particularly adapted for use in small places and in very small holes, slots, etc. Diameter of the measuring rods is but $\frac{3}{32}$ inch; length of the oblong base is but 2 inches, and its width $\frac{15}{32}$ inch. Base is hardened and ground, and its form assures firm hold.

Three rods are furnished with this Gauge, giving measurements from zero to three inches by thousandths. The rods are inserted through a hole in the screw and are securely fastened by the knurled cap. To compensate for wear, each rod is equipped with an adjusting nut to maintain its length. The end of each rod is hardened and lapped.

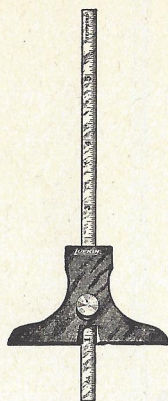
This Gauge has patent lock nut which permits the reading to be maintained.

For Measuring by Thousandths

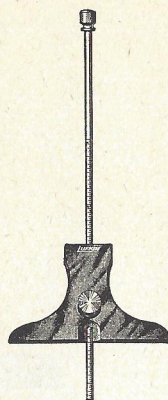
Number		Price Each
212	Micrometer Depth Gauge 2-inch Base. Range: 0 to 3 inch.	\$9.00
	Ratchet Stop—Supplied when ordered. Extra Each.....	.50

Packing: One only in hinged wooden box with clasp.

Weight each: 14 ozs.



No. 510



No. 512

Depth Gages

These are very handy Depth Gages for tool and die makers, machinists and others.

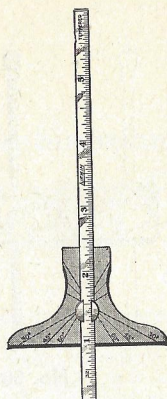
All heads are of steel, case-hardened, designed to fit the hand nicely, and well finished. Heads give good range as they are $2\frac{1}{2}$ inches wide across the base and $\frac{1}{8}$ inch thick (approximately 63x3 millimeters). Heads are deeply notched on one side so graduations can be most easily read.

All blades are tempered, machine divided, and fitted in slot of head. They can be securely clamped at any point by means of knurled nut and tension spring. They are removable for use separately as scales. These are the only Depth Gages having graduations on the round rod.

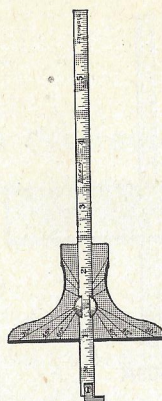
Number		Price Each
510	6-inch Depth Gage. With Narrow ($\frac{3}{16}$ inch) Spring Tempered Rule. Rule marked one side 32nds, other side 64ths inch. (Rule No. 2310)...	\$1.50
512	6-inch Depth Gage. With Round, Graduated Rod. Rod, while round, is graduated, a distinctive feature. It is tempered and being but $\frac{1}{10}$ inch in diameter, gives access to small holes. Rod is graduated 4 inches to 32nds. Measurement is arrived at without the additional use of a rule, making this the ideal tool of its kind.....	1.50
510M	15-centimeter Depth Gage. With 5 mm. wide Spring Tempered Rule. Rule marked one side millimeters, other side $\frac{1}{2}$ mm. (Rule No. 2300M)	1.50
512M	15-centimeter Depth Gage. With Round, Graduated Rod. Rod is tempered and being approximately $2\frac{1}{2}$ millimeters in diameter, gives access to small holes. Rod is graduated 10 centimeters to millimeters. Measurement is arrived at without the additional use of a rule.....	1.50

Packing: One in a box. Weight each: 2 ounces

NOTE: Micrometer Depth Gages—See pages 36 and 37.



No. 511



No. H-511

Depth Gages

Combination Depth Gage and Hook Rule

These are very handy Depth Gages for tool and die makers, machinists and others. All have degree lines on head, to which rule can be swung and set, serving as a Protractor for some kinds of work.

All heads are of steel, case-hardened, designed to fit the hand nicely, and well-finished. Heads give good range as they are $2\frac{1}{2}$ inches wide across the base and $\frac{1}{8}$ inch thick (approximately 63x3 millimeters). Heads are deeply notched on one side so graduations can be most easily read.

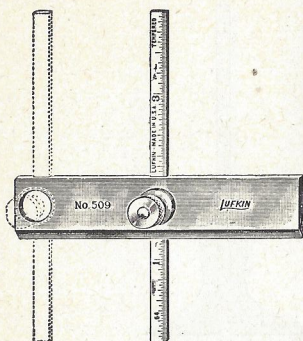
All blades (rules) are tempered, machine divided, and fitted in slot of head. They can be securely clamped at any point by means of knurled nut and tension spring. They are removable for use separately as scales.

Number **H-511** is same as No. **511** except rule has hook, i.e., is a standard narrow pattern Hook Rule. This makes a convenient tool for certain kinds of calipering work. It serves well as a Depth Gage also, the hook being readily detached by giving eccentric stud a half turn.

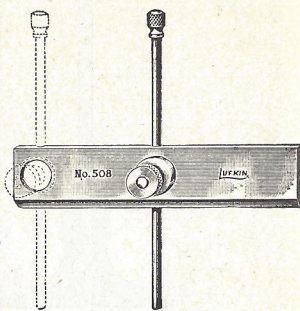
Number		Price Each
511	6-inch Depth Gage. With Degree Lines on Head. With Narrow ($\frac{3}{16}$ inch) Spring Tempered Rule. Rule marked one side 32nds, other side 64ths inch. (Rule No. 2310). One side of head is marked, both right and left, with 30, 45 and 60-degree lines, to which rule can be swung and set, making a simple protractor suitable for certain classes of work.	\$2.25
H-511	6-inch Combination Depth Gage and Hook Rule. With Degree Lines on Head, as described above. With $\frac{3}{16}$ inch wide Spring Tempered Rule with Hook. Rule marked one side 32nds, other side 64ths inch. (Rule No. H-2310)	2.75
511M	15-centimeter Depth Gage. With Degree Lines on Head, as described above. With 5 mm., wide Spring Tempered Rule. Rule marked one side millimeters, other side $\frac{1}{2}$ mm. (Rule No. 2300M)	2.25

Packing: One in a box. Weight each: 2 ounces

NOTE: Micrometer Depth Gages—See pages 36 and 37.



No. 509A



No. 508A

Depth Gages

These Depth Gages are for use where a wider base is necessary to properly carry over the space to be measured. They have bases $3\frac{1}{2}$ inches, or 6 inches, or 10 inches wide, a range covering almost any requirement.

The narrow steel rules and the round rods slide in a groove properly fitted for them and can be securely clamped at any point by means of a knurled nut and tension spring. The rules are but $\frac{3}{16}$ inch wide, the rods $\frac{1}{10}$ inch in diameter, and all are tempered. All can be used in two positions, either at center or end of the base, most suitable for taking difficult measurements. The measuring edge of the base is beveled to give a line contact with the surface of the work being gaged.

The machine divided steel rules are graduated one side 32nds, other side 64ths inch (Rule No. 2310). Removed from base they can be used separately as scales. The round rod of Gages 508A, B and C is not graduated.

Depth Gages with Graduated Steel Rule

Number			Price Each
509A	With $3\frac{1}{2}$ -inch Base.	With 4-inch Rule.....	\$1.50
509B	With $3\frac{1}{2}$ -inch Base.	With 6-inch Rule.....	1.80
509C	With 6 -inch Base.	With 4-inch Rule.....	1.80
509D	With 6 -inch Base.	With 6-inch Rule.....	2.10
509E	With 10 -inch Base.	With 6-inch Rule.....	2.70

Depth Gages with Round Rod

508A	With $3\frac{1}{2}$ -inch Base.	With $3\frac{1}{2}$ -inch Rod.....	\$0.90
508B	With 6 -inch Base.	With 6 -inch Rod.....	1.40
508C	With 10 -inch Base.	With 6 -inch Rod.....	1.65

Packing: One in a box

Weight each: with $3\frac{1}{2}$ " base—3 ozs.; 6" base—4 ozs.; 10" base—6 ozs.

NOTES: Metric—Number 509 series Depth Gages can be furnished with metric rule (Rule No. 2300M). Prices same as Gages with corresponding length rule in inches.
Micrometer Depth Gages—See pages 36 and 37.



Combination Squares—Bevel Protractors Combination Sets

(PAGES 42 TO 49)

General Description

These tools have so many and such varied uses as to be almost indispensable to all mechanics in metal working, machinists, pattern makers and others. They consist of a steel rule (or blade) on which slide the square head (or stock), the center head and the protractor head, singly or in sets.

We offer Combination Squares and Combination Sets of two kinds: with square and center heads drop forged and hardened; with square and center heads cast, sometimes known as "not hardened." We catalogue them with blades in all graduations commonly required. Our Squares have many improved features. Accuracy and provisions to insure continued accuracy in use are the first consideration in their design and manufacture.

All blades are tempered. All blades are machine divided, markings being most legible. All heads are nicely enameled. The polished and the enameled parts of all heads are well finished. All heads can be accurately, quickly and securely set at any point along the blade. Blades can easily be entirely removed for use separately as rules. Square heads have square and miter faces, and in all sizes (except the 4-inch standard and No. 135) are equipped with level glass and steel scriber. All protractor heads have level. There is good clearance around all set nuts and over the level glasses. Our Squares handle nicely and present a well balanced, fine appearance. All parts are interchangeable.

Below are mentioned but a few of their many uses

Combination Squares

These consist of blade with square head, or with square and center heads. They serve as both try and miter squares, and, the blade being adjustable in length by moving the head, they take the place of a whole set of common squares. They are very handy for accurately transferring measurements and for laying out work. Square face of head set flush with end of blade converts the tool into a height gage for ordinary uses, and setting it at desired distance from end of blade makes it a marking gage; so adjusted it will also serve as a depth gage for measuring and squaring in mortises, etc. The scriber is always conveniently at hand. The stock can be used as a simple level, and, with the blade, for squaring and leveling surfaces one with another.

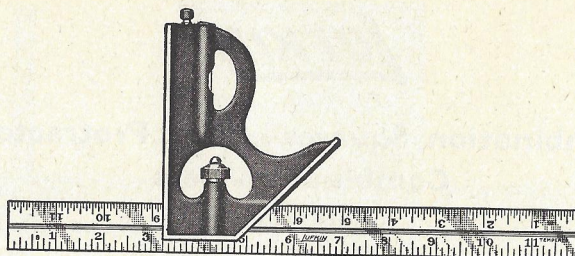
With the center head, centers of all cylindrical work can be determined. The arms of our center heads are ground to equal length and have ends uniformly machined, greatly increasing the range of the tool by giving accurate results on work of large and small diameters.

Bevel Protractors

These are the graduated blade fitted with protractor head, single or double type, otherwise known as plain and reversible, i.e., with shoulder extending from one side only or both sides of blade. Our protractor heads are so constructed that the double can be readily converted into the single type, the one tool thus serving all purposes of both styles. The revolving turret is accurately marked with degrees from 0 to 90 right and left. Having two thumb screws, it can be securely set at any angle. All our protractor heads are equipped with level glass.

Combination Sets

These are graduated blade together with square, center and protractor heads, a tool serving all the purposes of the Combination Square and Bevel Protractor. These Combination Sets have more applications in use than any other tool made for mechanics.



Combination Squares

Blade with Square Head Only

Level in Head
(4" excepted)

Tempered Blade

WITH CAST HEAD

No. 25	Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.	
Size:	4-inch.....	Price, each \$1.50
	6-inch.....	Price, each 1.80
	9-inch.....	Price, each 2.40
	12-inch.....	Price, each 3.00
	18-inch.....	Price, each 3.90
	24-inch.....	Price, each 4.80

No. 25M Graduation: Metric Only.

No. 25ME Graduation: Metric & English.

Size:	10-cm.....	Price, each \$1.50
	15-cm.....	Price, each 1.80
	20-cm.....	Price, each 2.40
	30-cm.....	Price, each 3.00
	50-cm.....	Price, each 3.90
	60-cm.....	Price, each 4.80

WITH DROP FORGED AND HARDENED HEAD

No. 35	Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.	
Size:	4-inch.....	Price, each \$2.30
	6-inch.....	Price, each 3.10
	9-inch.....	Price, each 3.40
	12-inch.....	Price, each 4.30
	18-inch.....	Price, each 5.40
	24-inch.....	Price, each 6.30

No. 35M Graduation: Metric Only.

No. 35ME Graduation: Metric & English.

Size:	10-cm.....	Price, each \$2.30
	15-cm.....	Price, each 3.10
	20-cm.....	Price, each 3.40
	30-cm.....	Price, each 4.30
	50-cm.....	Price, each 5.40
	60-cm.....	Price, each 6.30

Nos. 25M and 35M are marked: Three edges in millimeters;
One edge in $\frac{1}{2}$ millimeters.

Nos. 25ME and 35ME are marked: One side $\frac{1}{2}$ millimeters and 32nds inch;
Other side millimeters and 64ths inch.

Packing: One in a box

Weight each: No. 25 Series.... 4, 6, 10, 17, 22 and 26 ounces.

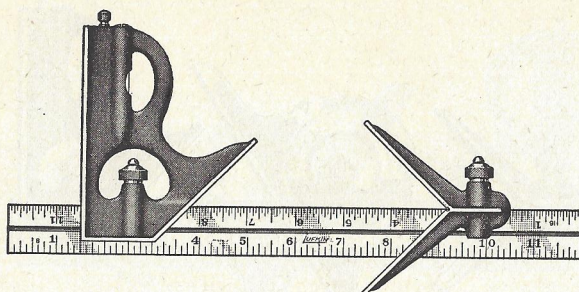
No. 35 Series.... 4, 7, 11, 19, 24 and 28 ounces.

NOTES: Other Graduations Furnished Without Extra Charge on Nos. 25 and 35:

No. 7 (16ths, 32nds, 64ths and 100ths) on all lengths.

No. 16 (32nds, 64ths, 50ths and 100ths) on 12-inch only.

General Description of Combination Squares — See page 41.



Combination Squares

Blade with Square and Center Heads

Level in Square Head

(4" excepted)

Tempered Blade

WITH CAST HEADS

No. 25C	Graduation: No. 4.
	8ths, 16ths, 32nds, 64ths inch.
Size: 4-inch.....	Price, each \$2.10
6-inch.....	Price, each 2.40
9-inch.....	Price, each 3.00
12-inch.....	Price, each 3.60
18-inch.....	Price, each 4.50
24-inch.....	Price, each 5.40

No. 25C-M Graduation: Metric Only.

No. 25C-ME Graduation: Metric & English.

Size: 10-cm.....	Price, each \$2.10
15-cm.....	Price, each 2.40
20-cm.....	Price, each 3.00
30-cm.....	Price, each 3.60
50-cm.....	Price, each 4.50
60-cm.....	Price, each 5.40

WITH DROP FORGED AND HARDENED HEADS

No. 35C	Graduation: No. 4.
	8ths, 16ths, 32nds, 64ths inch.
Size: 4-inch.....	Price, each \$3.80
6-inch.....	Price, each 4.60
9-inch.....	Price, each 5.30
12-inch.....	Price, each 6.20
18-inch.....	Price, each 7.30
24-inch.....	Price, each 8.20

No. 35C-M Graduation: Metric Only.

No. 35C-ME Graduation: Metric & English.

Size: 10-cm.....	Price, each \$3.80
15-cm.....	Price, each 4.60
20-cm.....	Price, each 5.30
30-cm.....	Price, each 6.20
50-cm.....	Price, each 7.30
60-cm.....	Price, each 8.20

Nos. 25C-M and 35C-M are marked: Three edges in millimeters;
One edge in $\frac{1}{2}$ millimeters.

Nos. 25C-ME and 35C-ME are marked: One side $\frac{1}{2}$ millimeters and 32nds inch;
Other side millimeters and 64ths inch.

Packing: One in a box

Weight each: No. 25C Series... 5, 8, 13, 21, 26 and 30 ounces.

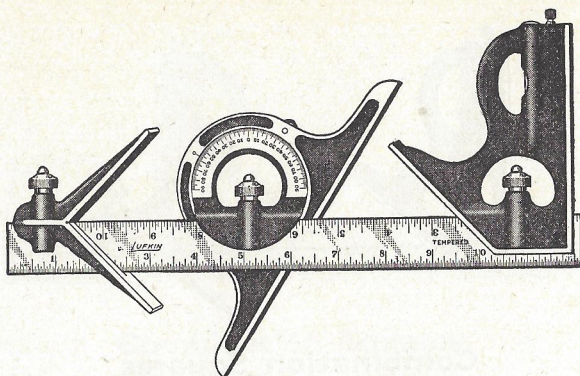
No. 35C Series... 5, 9, 14, 23, 28 and 32 ounces.

NOTES: Other Graduations Furnished Without Extra Charge on Nos. 25C and 35C:

No. 7 (16ths, 32nds, 64ths and 100ths) on all lengths.

No. 16 (32nds, 64ths, 50ths and 100ths) on 12-inch only.

General Description of Combination Squares—See page 41.



Combination Sets

Blade with Square, Center and Protractor Heads

(Protractor head not reversible)

Level in All Square and Protractor Heads

Tempered Blade

WITH CAST HEADS

No. 525	Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.	
Size: 9-inch.....	Price, each	\$6.00
12-inch.....	Price, each	6.60
18-inch.....	Price, each	7.50
24-inch.....	Price, each	8.40

No. 525M Graduation: Metric Only.

No. 525ME	Graduation: Metric & English.	
Size: 20-cm.....	Price, each	\$6.00
30-cm.....	Price, each	6.60
50-cm.....	Price, each	7.50
60-cm.....	Price, each	8.40

WITH SQUARE AND CENTER HEADS DROP FORGED AND HARDENED

No. 535	Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.	
Size: 9-inch....	Price, each	\$8.30
12-inch....	Price, each	9.20
18-inch....	Price, each	10.30
24-inch....	Price, each	11.20

No. 535M Graduation: Metric Only.

No. 535ME	Graduation: Metric & English.	
Size: 20-cm.....	Price, each	\$ 8.30
30-cm.....	Price, each	9.20
50-cm.....	Price, each	10.30
60-cm.....	Price, each	11.20

Nos. 525M and 535M are marked: Three edges in millimeters;
One edge in $\frac{1}{2}$ millimeters.

Nos. 525ME and 535ME are marked: One side $\frac{1}{2}$ millimeters and 32nds inch;
Other side millimeters and 64ths inch.

Packing: One in a box

Weight each: No. 525 Series... 24, 30, 35 and 39 ounces.

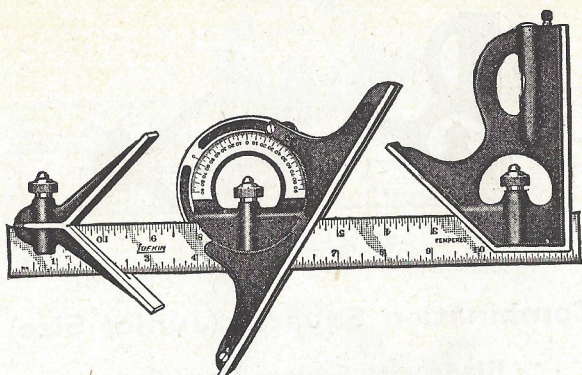
No. 535 Series... 26, 32, 37 and 41 ounces.

NOTES: Other Graduations Furnished Without Extra Charge on Nos. 525 and 535:

No. 7 (16ths, 32nds, 64ths and 100ths) on all lengths.

No. 16 (32nds, 64ths, 50ths and 100ths) on 12-inch only.

General Description of Combination Sets — See page 41.



Combination Sets

Blade with Square, Center and Protractor Heads (Protractor head reversible)

Level in All Square and Protractor Heads

Tempered Blade

WITH CAST HEADS

No. 625	Graduation: No. 4.
	8ths, 16ths, 32nds, 64ths inch.
Size: 9-inch.....	Price, each \$7.20
12-inch.....	Price, each 7.80
18-inch.....	Price, each 8.70
24-inch.....	Price, each 9.60

No. 625M Graduation: Metric Only.

No. 625ME	Graduation: Metric & English.
Size: 20-cm.....	Price, each \$7.20
30-cm.....	Price, each 7.80
50-cm.....	Price, each 8.70
60-cm.....	Price, each 9.60

WITH SQUARE AND CENTER HEADS DROP FORGED AND HARDENED

No. 635	Graduation: No. 4.
	8ths, 16ths, 32nds, 64ths inch.
Size: 9-inch.....	Price, each \$ 9.50
12-inch.....	Price, each 10.40
18-inch.....	Price, each 11.50
24-inch.....	Price, each 12.40

No. 635M Graduation: Metric Only.

No. 635ME	Graduation: Metric & English.
Size: 20-cm.....	Price, each \$ 9.50
30-cm.....	Price, each 10.40
50-cm.....	Price, each 11.50
60-cm.....	Price, each 12.40

Nos. 625M and 635M are marked: Three edges in millimeters;
One edge in $\frac{1}{2}$ millimeters.

Nos. 625ME and 635ME are marked: One side $\frac{1}{2}$ millimeters and 32nds inch;
Other side millimeters and 64ths inch.

Packing: One in a box

Weight each: No. 625 Series... 27, 34, 39 and 43 ounces.

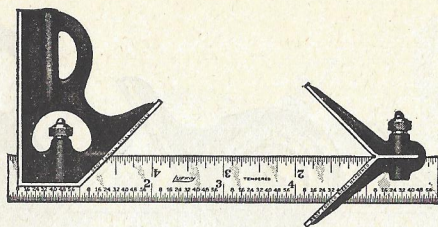
No. 635 Series... 29, 36, 41 and 45 ounces.

NOTES: Other Graduations Furnished Without Extra Charge on Nos. 625 and 635:

No. 7 (16ths, 32nds, 64ths and 100ths) on all lengths.

No. 16 (32nds, 64ths, 50ths and 100ths) on 12-inch only

General Description of Combination Sets — See page 41.



Combination Squares (Junior Size)

Blade with Square Head Only

also

Blade with Square and Center Heads

All Heads Drop Forged and Hardened

Readable Graduations (64ths numbered)

Tempered Blade

These Drop Forged Squares are of same general pattern as our No. 35 and 35C lines but with narrower blade ($\frac{5}{8}$ inch) and with smaller square and center heads than the corresponding length in those lines. These appeal particularly to tool and die makers, pattern makers and others, because of their smaller size and lighter weight.

"Readable" Graduations are another distinctive feature of these "Junior" Squares; the 64ths are numbered every 8th division, the 32nds every 4th division.

These Combination Squares are made only with 6-inch blade.

Number

Price
Each

135	Blade with Square Head only. Length Blade: 6 inches. No. 4 Graduation—8ths, 16ths, 32nds, 64ths inch.....	\$3.50
135C	Blade with Square and Center Heads. Length Blade: 6 inches. No. 4 Graduation—8ths, 16ths, 32nds, 64ths inch.....	4.40

Packing: One in a box

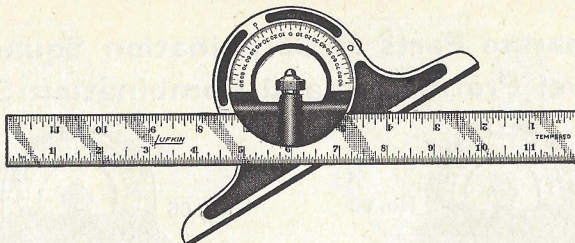
Weight each: No. 135—4 ozs.,

No. 135C—6 ozs.

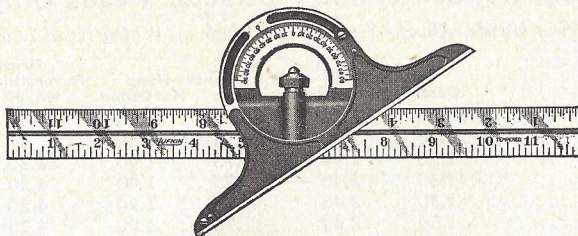
Blade Only (For No. 135 or 135C)

Length: 6 inches. Graduation: No. 4..... **1.70**

NOTE: General Description of Combination Squares—See Page 41.



No. 5 Not Reversible.
(Head has shoulder on one side of blade)



No. 6 Reversible.
(Head has shoulder on both sides of blade)

Bevel Protractors

Blade with Protractor Head Only

Level in All Heads

Tempered Blade

WITH PROTRACTOR HEAD NOT REVERSIBLE

No. 5	Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.	
Size: 9-inch	Price, each	\$4.50
12-inch	Price, each	4.90
18-inch	Price, each	6.00
24-inch	Price, each	6.90
No. 5M	Graduation: Metric Only.	
No. 5ME	Graduation: Metric & English.	
Size: 20-cm	Price, each	\$4.50
30-cm	Price, each	4.90
50-cm	Price, each	6.00
60-cm	Price, each	6.90

WITH REVERSIBLE PROTRACTOR HEAD

No. 6	Graduation: No. 4. 8ths, 16ths, 32nds, 64ths inch.	
Size: 9-inch	Price, each	\$5.70
12-inch	Price, each	6.10
18-inch	Price, each	7.20
24-inch	Price, each	8.10
No. 6M	Graduation: Metric Only.	
No. 6ME	Graduation: Metric & English.	
Size: 20-cm	Price, each	\$5.70
30-cm	Price, each	6.10
50-cm	Price, each	7.20
60-cm	Price, each	8.10

Nos. 5M and 6M are marked: Three edges in millimeters;
One edge in $\frac{1}{2}$ millimeters.

Nos. 5ME and 6ME are marked: One side $\frac{1}{2}$ millimeters and 32nds inch;
Other side millimeters and 64ths inch.

Packing: One in a box

Weight each: No. 5 Series... 15, 18, 23 and 27 ounces.

No. 6 Series... 18, 21, 26 and 30 ounces.

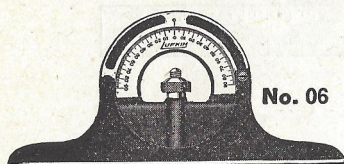
NOTES: Other Graduations Furnished Without Extra Charge on Nos. 5 and 6:

No. 7 (16ths, 32nds, 64ths and 100ths) on all lengths.

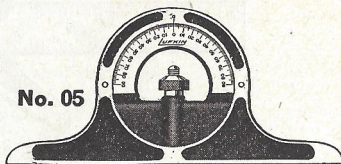
No. 16 (32nds, 64ths, 50ths and 100ths) on 12-inch only.

General Description of Bevel Protractors—See Page 41.

Separate Parts of Combination Squares, Bevel Protractors and Combination Sets



No. 06

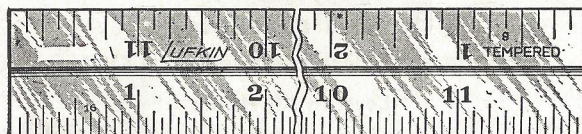


No. 05

Square, Center and Protractor Heads Only

In Ordering Heads, Always State Length Blade on Which Head Is to be Used

For Blade Length		Square Head		Center Head		Protractor Head	
		Cast	Hardened	Cast	Hardened	Reversible No. 06	Not Reversible No. 05
4-inch.	Each.....	\$0.90	\$1.50	\$0.75	\$1.50	.....	.....
6-inch.	Each.....	.90	1.90	.75	1.50	.....	.....
9-inch.	Each.....	1.20	1.90	.75	1.90	\$4.20	\$3.00
12-inch.	Each.....	1.50	2.40	.75	1.90	4.20	3.00
18-inch.	Each.....	1.50	2.40	.75	1.90	4.20	3.00
24-inch.	Each.....	1.50	2.40	.75	1.90	4.20	3.00
Scribers Only.....						Each	\$0.15
Bolt (with nut and spring).....						Each	.35



Combination Square Blades Only—Standard Graduations

No. 2504	Blade. Graduation No. 4. (8ths, 16ths, 32nds, 64ths inch.)						
No. 2507	Blade. Graduation No. 7. (16ths, 32nds, 64ths, 100ths inch.)						
	Length	4-inch	6-inch	9-inch	12-inch	18-inch	24-inch
	Price, each.	\$0.80	\$1.20	\$1.50	\$1.90	\$3.00	\$3.90
No. 2504R	Blade. Grad. No. 4 (8ths, 16ths, 32nds, 64ths.) Readable 32nds and 64ths.						
	Length				12-inch	18-inch	24-inch
	Price, each				\$2.30	\$3.60	\$4.70
No. 2516R	Blade. Grad. No. 16 (32nds, 64ths, 50ths, 100ths). Readable 50ths and 100ths. Length: Made in 12-inch only Price, each \$2.30						
No. S-2504	Stainless Steel Blade. Graduation No. 4 (8ths, 16ths, 32nds, 64ths inch).						
	Length				12-inch	18-inch	24-inch
	Price, each				\$3.25	\$5.40	\$7.25

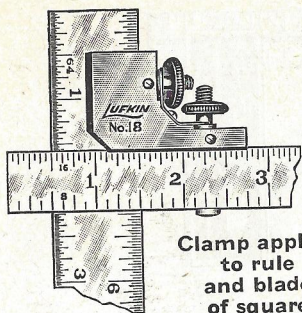
Blade Only for Nos. 135 and 135C, listed foot of page 46.

Combination Square Blades Only—Shrink Graduation

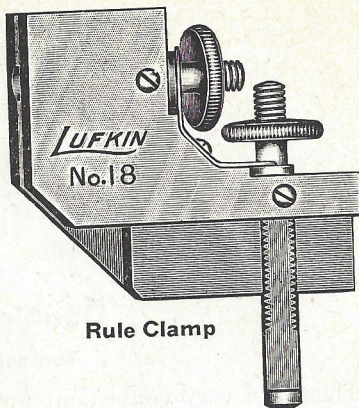
In all graduations on these Blades allowance is made for shrinkage of castings; the amount of such allowance is indicated below. These Blades are used by foundrymen, patternmakers and others. These Shrink Blades fit heads of our standard 12-inch size Combination Squares. They are tempered and machine divided. Shrink blades are made in 12-inch length only.

Number	Shrink per Foot	Graduation	Price, Each
2583E Shrink Blade	$\frac{1}{8}$ inch	8ths, 16ths, 32nds, 64ths inch	\$2.70
2583F Shrink Blade	$\frac{3}{16}$ inch	8ths, 16ths, 32nds, 64ths inch	2.70

NOTE: Prices on this page apply also to Parts of corresponding size M and ME Combination Squares, etc.



Clamp applied
to rule
and blade
of square



Rule Clamp

Right Angle Rule Clamps

(Attachment for Combination Square)

These Right Angle Rule Clamps will firmly hold at right angles a combination square blade (of 12, 18 or 24-inch length), and any regular steel rule not over one inch wide. So combined and employed with the heads of a Combination Square many valuable applications and uses are found. These Clamps can also be applied to Thin Steel Squares, such as our No. 139.

A feature of these Rule Clamps is the clip with prongs at each end, as pictured above. These prongs at all times hold both clamp nuts in place. Thus interference of the two bolts and nuts is eliminated and the operation of the tool simplified. The thumb nuts are knurled and of size most convenient to operate.

The essential difference between the two Clamps is that No. 18B has longer blade seats, as detailed below.

Body of **18A** is $1\frac{1}{2}$ x $1\frac{25}{32}$ x $\frac{1}{32}$ inch.

Body of **18B** is $2\frac{5}{8}$ x $2\frac{5}{16}$ x $\frac{1}{32}$ inch.

Number

18A Right Angle Rule Clamp

Length of blade seats: Slotted leg..... $1\frac{1}{16}$ inch. Open leg..... $1\frac{1}{16}$ inch. Price, each \$1.00

18B Right Angle Rule Clamp

Length of blade seats: Slotted leg..... $2\frac{7}{16}$ inch. Open leg..... $2\frac{5}{16}$ inch. 1.25

Packing: Four in a box.

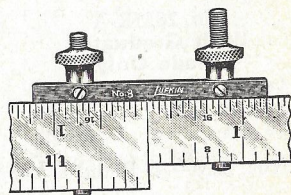
Weight per box of 4: No. 18A, 10 ozs.; No. 18B, 1 lb.

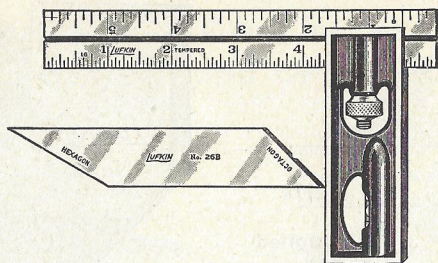
Rule Clamp

Used when a measurement greater than the length of any single rule at hand must be accurately taken. This Clamp firmly holds two rules end to end as here shown. As the clamp bolts are independently adjustable (by means of knurled thumb nuts) this Clamp will join two rules whether they be of same or different width or thickness. The width capacity is $1\frac{1}{4}$ inches. This device is in mottled blue finish. It is popular because the ordinary tool chest will not accommodate rules over 12 inches long.

No. 8 Rule Clamp.....Price, Each \$0.60

Packing: Four in a box.





Double Squares

Tempered Blades

These are very convenient for pattern makers, machinists and tool makers. Unlike simple try squares, the blades are adjustable in length by moving the head. Thumb screw serves to securely set blades at any point. Both faces of the head are square. In the 6-inch and 15-cm. Squares the head is equipped with level. Polished and enameled parts of head are all well finished.

The bevel blade, illustrated above, gives hexagon and octagon angles, and is so marked, an improved feature.

The drill grinding blade converts the tool into a most practical Drill Grinding Gage. For markings and uses of this blade, see next page.

With No. 4 Graduation—8ths, 16ths, 32nds, 64ths Inch

With Graduated Blade Only No. 26A

Length	Price, Each
4-inch	\$1.85
6-inch	2.85

(6-inch Blade of No. 135, listed foot of page 46, can be used with the head of Nos. 26A and 26B 4-inch.)

With Graduated and Bevel Blades No. 26B

Length	Price, Each
4-inch	\$2.35
6-inch	3.45

With Graduated, Bevel and Drill Grinding Blades No. 26C

Length	Price, Each
6-inch	\$4.70

Graduated Metric Only

No. 26M-A

No. 26M-B

No. 26M-C

Graduated Metric and English

No. 26ME-A With Graduated Blade Only

Length	Price, Each
10 cm	\$1.85
15 cm	2.85

No. 26ME-B With Graduated and Bevel Blades

Length	Price, Each
10 cm	\$2.35
15 cm	3.45

No. 26ME-C With Graduated, Bevel and Drill Grinding Blades

Length	Price, Each
15 cm	\$4.70

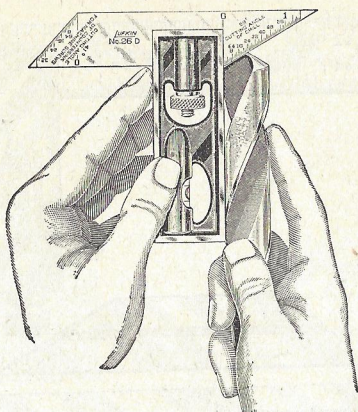
Nos. 26M—A, B and C are marked: Three edges in millimeters;
One edge in $\frac{1}{2}$ millimeters.

Nos. 26ME—A, B and C are marked: One side $\frac{1}{2}$ millimeters and 32nds inch;
Other side millimeters and 64ths inch.

Packing: One in a box.

Weight each, with 2 blades: 4-inch . . . 4 ozs.; 6-inch . . . 8 ozs.

NOTE: Separate parts of Double Squares—See foot of page 51.



Drill Grinding Gage

Tempered Blade

This is an ideal tool for use in drill grinding work, yet of moderate price. With it the cutting edges of drills and countersinks are most readily and accurately tested for proper angle, and their points for proper centering.

The head, or stock, is that of the Double Square (page 50), standard size and equipped with level. Polished and enameled parts of this head are all well finished. The drill grinding blade fits the head of six inch Double Square.

The bevel of blade at one end is 59 degrees, representing the cutting angle of drills; and at the other end 41 degrees, the cutting angle of countersinks for machine screws. Blade is slotted down the center, slides readily in the head, and may be securely set by thumb screw. It is $4\frac{9}{16}$ inches long overall.

The two bevel ends of blade are graduated to 64ths of an inch and have Readable Numbering, as on steel rules. A valuable and distinctive feature of this tool is that the graduations are placed to measure at right angles to the face of the square head, which, of course, is perpendicular with the axis of the drill. Thus the center of drill is directly obtained by reading the graduation. This affords the simplest and most accurate method of centering drill points.

The face of the square head, to which the drill is held, is $\frac{1}{16}$ inch wide, another aid to accurate and quick drill testing.

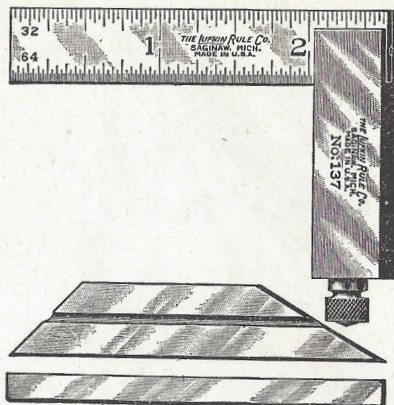
Number	Price, Each
26D Drill Grinding Gage Complete. Weight each 6 ozs.....	\$2.90
26E Drill Grinding Blade Only for No. 26D.....	1.25

Packing: One in a box

NOTE: Number 26D with addition of Graduated Measuring Blade and Plain Bevel Blade is No. 26C, listed page 50.

Separate Parts of Double Squares and Drill Grinding Gage (Pages 50 and 51)

Graduated Measuring Blade		Plain Bevel Blade	
4 inch (10 cm).....	Each \$0.90	For 4 inch Square.....	Each \$0.50
6 inch (15 cm).....	Each 1.35	For 6 inch Square.....	Each .60
Drill Grinding Blade		Head or Stock Only	
For Head of 6 inch Square..	Each \$1.25	For 4 inch Square.....	Each \$1.00
		For 6 inch Square.....	Each 1.60



Double Steel Squares

With Hardened and Ground Head and Blades

Designed especially for tool and die makers. Both faces of head (or stock) are square. All blades slide in head, permitting use in places where a square with fixed blade could not be used. Knurled thumb nut with tension spring serves to securely lock any of the blades.

This Square is furnished in various combinations with the following blades:

Standard Blade. . . . Graduated one side only, upper edge 32nds, lower edge 64ths inch.

2½ inches long. Approximately ½ inch wide.

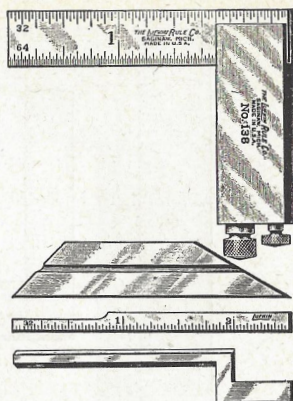
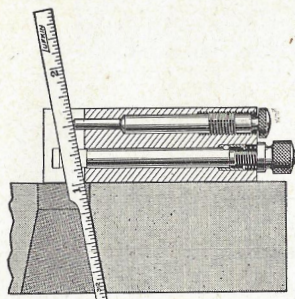
Bevel Blade. To determine 30 and 45 degree angles. 2½ inches long. Approximately ½ inch wide.

Narrow Blade. ⅛ inch wide. 2½ inches long. Ungraduated. Very handy for squaring small holes.

Number	Price Each
137A Square with Standard Blade.	\$3.25
137B Square with Standard and Bevel Blades.	3.55
137N Square with Standard and Narrow Blades.	3.55
137C Square Complete, with Standard, Bevel and Narrow Blades.	3.85

Packing: One in a box. Weight each: About 2 ounces

NOTE: No. **137C** furnished unless otherwise specified.



Die Makers Squares

With Hardened and Ground Head and Blades

A tool and die makers Square designed so that the blades not only slide in the head (or stock) but can be adjusted at an angle with the stock. This is particularly valuable in determining the clearance in dies (see sectional view).

Both faces of the stock are square. Stock has two knurled thumb screws, the larger one is for locking blade in desired position, the smaller is for setting any of the blades at an angle. To set blade at an angle, first loosen the thumb screw which clamps the blade, then turn the smaller thumb screw into the stock. The sectional view shows how this action adjusts the blade to the desired angle, which is then held by tightening the clamping screw.

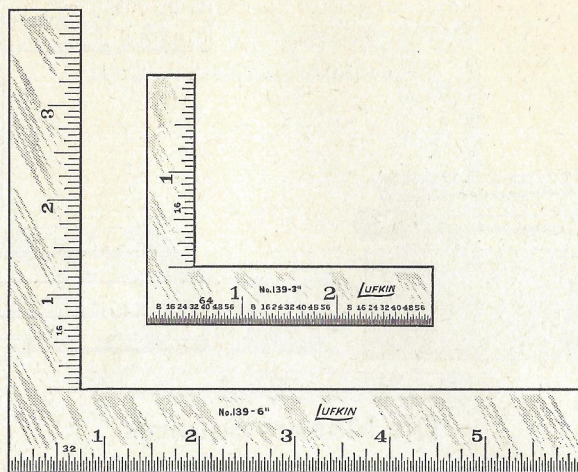
This Square is furnished in various combinations with the following blades:

- Standard Blade**..... Graduated one side only, upper edge 32nds, lower edge 64ths inch.
 $2\frac{1}{2}$ inches long. Approximately $\frac{1}{2}$ inch wide.
- Bevel Blade**..... To determine 30 and 45 degree angles.
 $2\frac{1}{2}$ inches long. Approximately $\frac{1}{2}$ inch wide.
- Narrow Blade**..... Approximately $\frac{5}{32}$ inch wide. $2\frac{1}{2}$ inches long.
 Cut away on one end $\frac{3}{4}$ inch back, giving a blade $\frac{3}{32}$ inch by $\frac{1}{16}$ inch in size for use in very small places.
 Blade graduated one side to 32nds inch.
- Offset Blade**..... Used in places where it is difficult to sight with the straight blade. The offset end of blade is approximately $\frac{1}{8}$ inch wide and extends from the stock about $1\frac{1}{2}$ inches. Both sides of each edge are beveled to give a line contact.

Number		Price Each
138A	Square with Standard Blade.....	\$4.00
138B	Square with Standard and Bevel Blades.....	4.30
138N	Square with Standard and Narrow Blades.....	4.50
138C	Square with Standard, Bevel and Narrow Blades.....	4.80
138CX	Square Complete, with Standard, Bevel, Narrow and Offset Blades...	5.80

Packing: One in a box. Weight each: About 3 ounces

NOTE: No. **138CX** furnished unless otherwise specified.



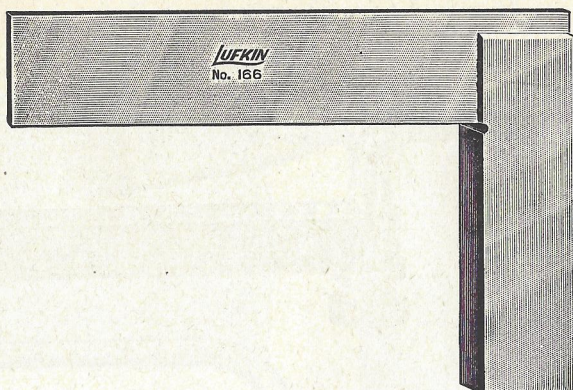
Thin Steel Squares

In laying out work these Squares are very handy for draftsmen, pattern and toolmakers, machinists and others.

They are graduated on one inside edge and one outside edge of both sides. The 2"x1" and 3"x2" Squares are graduated 16ths and 64ths inch on one side and 32nds and 64ths on the other side, and both these sizes have "Readable" Graduations (64ths numbered every 8th division). The 4"x3" and 6"x4" Squares are graduated 16ths and 32nds inch both sides.

Number	Size	Length of Blades	Thickness of Blades	Price, Each
139 — 2 inch		2" x 1"	$\frac{1}{20}$ inch	\$2.10
139 — 3 inch		3" x 2"	$\frac{1}{20}$ inch	2.70
139 — 4 inch		4" x 3"	$\frac{1}{16}$ inch	3.60
139 — 6 inch		6" x 4"	$\frac{1}{16}$ inch	5.10

Packing: Three in a box.
 Weight each: 2 and 3 inch, $\frac{1}{2}$ oz.
 4 inch, $1\frac{1}{2}$ ozs.
 6 inch, 3 ozs.



Hardened Solid Steel Squares Not Graduated

Superior Features of These Squares:

Solid, one-piece beam or base.

Blade positively drawn and firmly held to the ground seat of the base by heavy rivet with tapered bushing.

These are used as master squares and in checking close work. Both the beam and the blade are lapped. At the inner corner the beam is grooved to afford clearance for burr or dirt. The length of blade, as given below, is from the inner edge of the beam.

Wood Cases or Racks for protecting these Squares are also listed below. They are supplied only when specified.

No.	Size (Length Blade)	Length Beam	Price, Each
166	1½ inch	Solid Steel Square 1¾ inch.....	\$3.60
166	3 inch	Solid Steel Square 2¾ inch.....	4.50
166	4½ inch	Solid Steel Square 3½ inch.....	6.90
166	6 inch	Solid Steel Square 4¾ inch.....	9.00

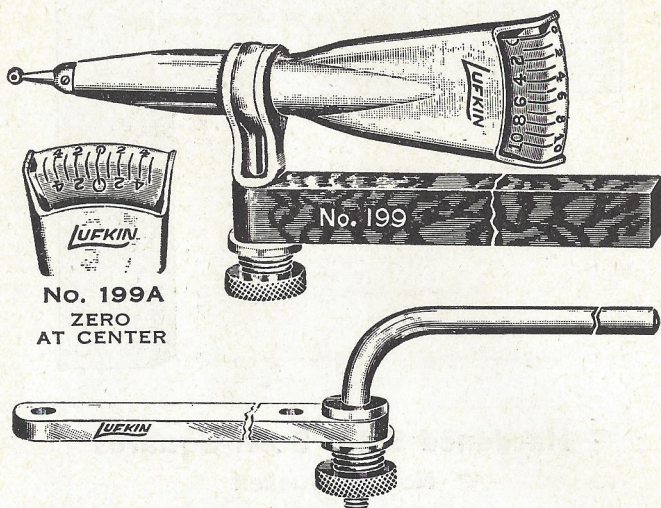
Packing: One in a box.

Weight, each: 1½ inch..... 1½ ozs.; 3 inch..... 4½ ozs.
4½ inch..... 10 ozs.; 6 inch..... 1 lb.

Wood Cases or Racks for Above Squares

For 1½ inch Square.....\$2.00 each.
For 3 inch Square..... 2.25 each.
For 4½ inch Square..... 2.50 each.
For 6 inch Square..... 3.00 each.

Indicator Full Size



Universal Indicator

(PATENTED)

Rotating Head

Positive Lock

Two Reading Faces

Can Be Used and Read in Any Practical Position

The Indicator, which is one unit, makes a complete revolution on its own center and also on the clamping bolt. This forms practically a universal joint, all locked in position by one thumb nut. The contact point is frictionally held and can be set at any position in a half circle.

A unique and valuable feature of this Indicator is the location of its reading faces. One of these is on the flat side or face, the other on the end or top, making this Indicator especially suitable for jig boring, milling machine and drill press work. In such work, the end graduation makes possible reading without a mirror. Also, when used with a Surface Gage and Vernier Height Gage, end reading is the convenient way. Users of this tool will instantly recognize that end reading is most natural and handy in a great many of the applications of an Indicator to its work.

A standard bar for general use and a special attachment are furnished with each Indicator. The special attachment is used in Drill Chuck or Surface Gage, its flat bar only is used with Vernier Height Gage. With it many other set-ups can be made. When used with our special (offset) attachment, our Indicator will enter a very small hole, because its contact point is in line with the rotating center.

The clamping device is a nut, spring and washer, held together as one unit. During set-up and previous to tightening it frictionally holds the Indicator in position.

Contact point and all working parts are hardened. Housing is of tough, rust-proof metal; clamp screw and nut are of steel for long wear.

This Indicator is offered in two styles of marking:

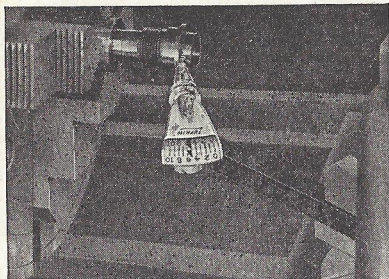
No. 199 has zero at extreme left, and reads left to right.

No. 199A has zero at center, and reads to the left and to the right.

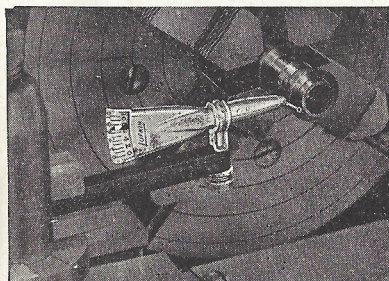
Ideal protection for this fine tool is our high grade, plush-lined case with spring-hinged cover. This case is supplied only when ordered.

FOR LISTINGS SEE FOOT OF NEXT PAGE

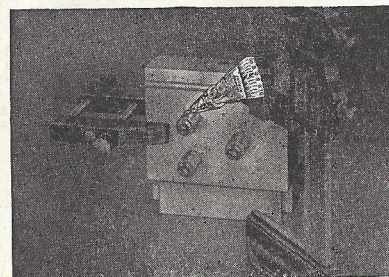
A Few of the Many Uses of **JUFKIN** Universal Indicator



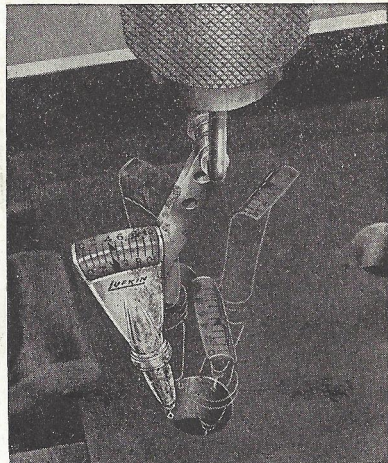
Indicating Flange in Lathe



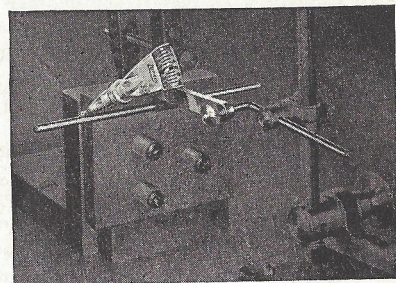
Indicating Diameter in Lathe



In Use with Height Gage



Indicating Hole in Jig Bore,
Milling Machine or Drill Press



In Use with Surface Gage

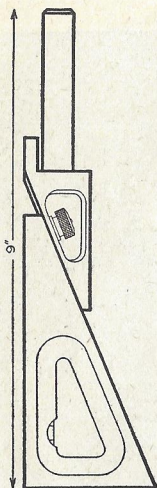
Listings of Universal Indicator

(For description see page 54-B)

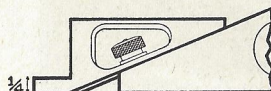
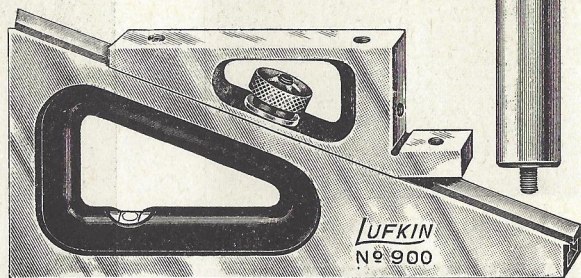
Number		Price, Each
199	Indicator. Zero reading at end	\$5.00
199A	Indicator. Zero reading at center	5.00
	Plush-lined Case for above. (Supplied only when ordered) .....	.75
520K	Indicator Attachment .....	.90
	(A spindle clamp with $\frac{1}{16}$ -inch hole for Surface Gage rod.)	

Special Diameter Contact Points, prices on application.

Packing: One in a box. Weight each, 5 ozs.

Master Planer and Shaper Gage**Hardened and Ground****(For further illustrations see next page.)**

**Position of Parts
to Get Maximum
Range, 9 inches**



**Position for
Smallest Setting,
 $\frac{1}{4}$ inch**



This is known as a "Master" Tool because it is designed and precision built, not only to serve better as a Planer Gage, but to properly handle many jobs to which the ordinary gage is unsuited. Slide and base are accurately fitted. Slot in which slide travels is beveled as well as ground, eliminating side play, assuring accuracy. All measuring surfaces are precisely ground. Gage can be used on base, on end, also flat on either side, as both slide and nut are within the outside width of base and both sides are ground square with the working edges.

A few of the many applications of this Master Gage are:

- Setting cutting tool on Planer or Shaper; saves time.**
(Set Gage to size with Micrometer, Surface Gage or Caliper.)
- Used with Gage Blocks in building up work on surface plate.**
- Used with Sine Bar in grinding angles.**
- Used with Indicator, for transferring measurements.**
- Used as an Adjustable Parallel (upper face of slide being extra long, and slide and base accurately fitted).**

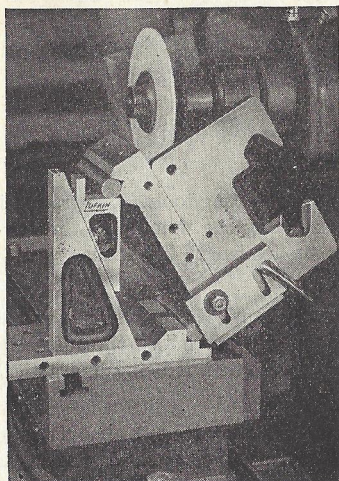
Three-inch extension, regularly supplied with each Gage, makes possible tool settings from $\frac{1}{4}$ inch to 9 inches; without extension the range is $\frac{1}{4}$ to $6\frac{1}{2}$ inches. (The one-inch extension, listed as an extra, is handy for adding an even inch.)

Base and slide are of drop forged steel, hardened. Base is $\frac{5}{8}$ inch wide, $5\frac{1}{8}$ inches long, and fitted with level. Slide has clamp nut securely locking it in position.

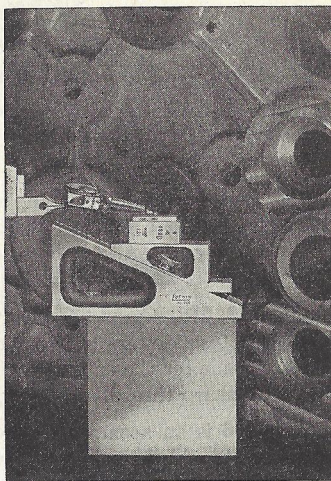
The Genuine Mahogany Case, listed as an extra, is in keeping with this fine tool and the best protection for it.

FOR LISTINGS SEE NEXT PAGE

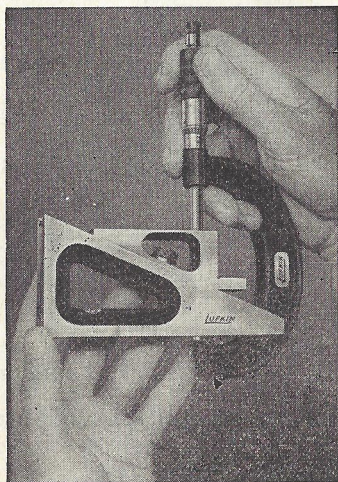
A Few of the Many Uses of LUFKIN No. 900 Master Planer and Shaper Gage



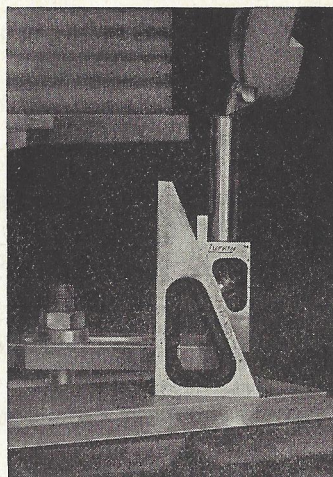
Used in Conjunction with Sine Bar in Grinding Angles



With Gage Blocks for Setting Up Work on a Surface Plate



Gage Being Set to Micrometer Accuracy



Used to Set Cutting Tool.
Note Use of Extension Bar.

Listing of Master Planer and Shaper Gage

(For description see page 54-D)

Number		Price, Each
900	Master Planer and Shaper Gage.....	\$8.00
	Mahogany Case for above. (Supplied only when ordered).....	1.50
	One-inch Extension for No. 900. (Supplied only when ordered).....	.75
	Packing: One in a box. Weight each, 22 ozs.	



Center Gages

Center Gages are used in grinding and setting screw cutting tools. The graduations carried are those most commonly required in determining the number of threads per inch or per centimeter. All are of steel, of approximate length $2\frac{1}{4}$ inches, width $\frac{1}{16}$ inch. All except No. **136** are of thickness $\frac{1}{25}$ inch.

Numbers **36**, **036**, **37** and **037** carry table of double depth figures. This is valuable, being used to determine tap drill size for sharp 60 and 55 degree "V" threads. Allowance must be made for the extent to which thread is flattened, it being impractical to tap a perfectly sharp thread.

Number **136** is an accurate Center Gage, hardened and ground all over, and is $\frac{1}{8}$ inch thick. Its added thickness gives greater gage contact surface, making it easier to find alignment, more quickly giving accurate result. It is a sturdy tool, most practical, easiest to handle, and especially suitable for checking heavy threads.

Marked 14ths, 20ths, 24ths and 32nds Inch

Number		Price, Each
36	Center Gage. Spring tempered. Angles of 60 degrees (U. S., i.e., National S. T. Standard).....	\$0.50
036	Center Gage. Not tempered. Angles of 60 degrees (U. S., i.e., National S. T. Standard).....	.40
37	Whitworth Standard Center Gage. Spring tempered. Angles of 55 degrees.....	.50
037	Whitworth Standard Center Gage. Not tempered. Angles of 55 degrees.....	.40

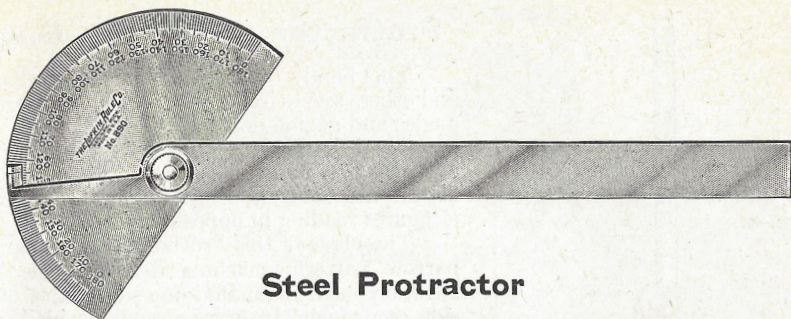
Not Graduated

Number		Price, Each
136	Heavy Center Gage. Hardened and Ground. Angles of 60 degrees (U. S., i.e., National S. T. Standard).....	\$3.50

Marked: Two edges in millimeters, Two edges in $\frac{1}{2}$ millimeters

Number		Price, Each
36M	Metric Center Gage. Spring tempered. Angles of 60 degrees.....	\$0.50
036M	Metric Center Gage. Not tempered. Angles of 60 degrees.....	.40

Packing: Six in a box.



Steel Protractor

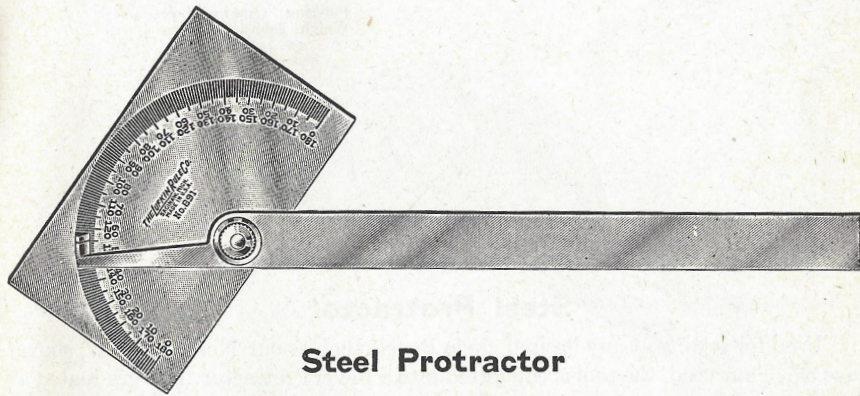
A handy Protractor for machinists, draftsmen, and other mechanics; used in setting bevels, transferring angles, and many other classes of work.

The head is semi-circular and its back is flat. It is graduated at the edge in degrees from 0 to 180, and has two rows of figures reading in opposite directions. The indicating arm of the blade has a line graduation for accurately setting and reading the Protractor. The blade is six inches long, has spring giving constant tension and can be securely set by means of the knurled thumb nut.

Number

Price, Each

890 Steel Protractor..... \$2.50



Steel Protractor

A handy Protractor differing from No. 890 only in the shape of the head. Used by machinists, draftsmen and others in setting bevels, transferring angles, etc.

Head being rectangular gives four working faces. Back of head is flat. Head is graduated in degrees from 0 to 180, and has two rows of figures reading in opposite directions. The indicating arm of the blade has a line graduation for accurately setting and reading the Protractor. The blade is six inches long, has spring giving constant tension and can be securely set by means of the knurled thumb nut.

Number

Price, Each

891 Steel Protractor..... \$3.00

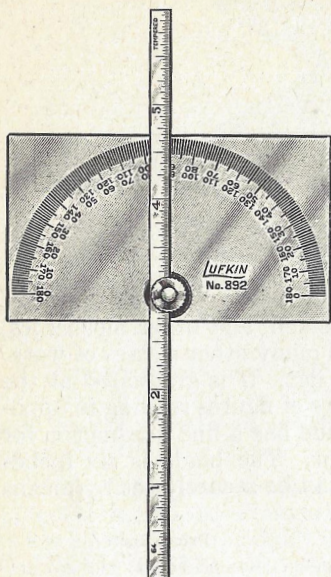
Packing Nos. **890** and **891**: One in a box. Weight each: 3 ounces

Protractor and Depth Gage

This handy tool for machinists, draftsmen and others serves for setting bevels, transferring angles and gaging depths.

The head being rectangular has four working faces. Back of head is flat. Head is graduated in degrees from 0 to 180 and has two rows of figures reading in opposite directions.

The blade of this Protractor is our regular, narrow pattern, machine divided scale No. 2310, six-inch, graduated one side 64ths, other side 32nds inch. It serves not only as blade and indicating arm for the Protractor, but also as graduated blade of Depth Gage, as it slides through the head of the set nut. It has spring affording constant tension and the knurled thumb nut securely sets it at any angle and at any length extended.



Number	Price, Each
892 Protractor and Depth Gage	\$3.00

NOTE: Blade graduated 64ths and 100ths (No. 2311 Rule)
Furnished with above when specified, without extra charge.

Packing: One in a box
Weight each: 3 ounces

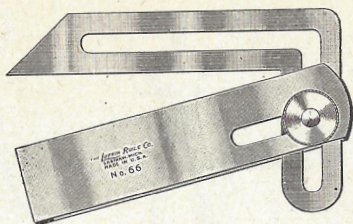


Steel Protractor

Used for setting at any desired angle Bevels such as our Nos. 66 and 67, shown page 59. Thus used, the tool is converted into a Bevel Protractor. It is graduated at the edge in degrees from 0 to 180, and has two rows of figures reading in opposite directions. The back of the tool is flat.

Number	Price, Each
893 Steel Protractor	\$1.75

Packing: One in a box
Weight each: 2 ounces



Universal Bevel

This Universal Bevel is a very popular tool, necessary in many classes of work. The blade is so shaped that it can be set even at the slightest angle.

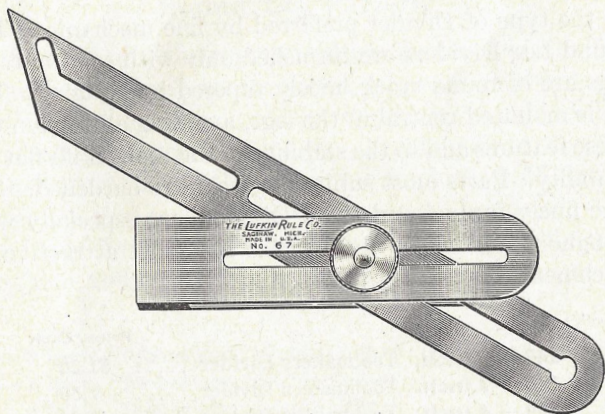
Arm of the blade having beveled end is 3 inches long. Stock is 3 inches long, and, while slotted, is solid on one edge for $1\frac{3}{4}$ inches, forming a rest under the blade against which the work may be placed and accurately fitted. This tool has a spring giving constant tension and knurled thumb nut with which the blade can be locked at any angle. Head of the clamping bolt sets into a recess, allowing the stock to lie flat on the work.

Bevel No. 66 can be used with Protractor No. 893 as a Bevel Protractor.

Number

Price, Each

66 Universal Bevel..... \$2.25



Universal Bevel

Blade of this Bevel has both straight and offset slots. Therefore it will take adjustments and angles that cannot be obtained with many common Bevels.

Stock is $3\frac{1}{2}$ inches long, blade 6 inches. This tool has a spring affording constant tension and knurled thumb nut with which the blade can be locked in any position. Head of the clamping bolt sets into a recess, allowing the stock to lie flat on the work.

Bevel No. 67 can be used with Protractor No. 893 as a Bevel Protractor.

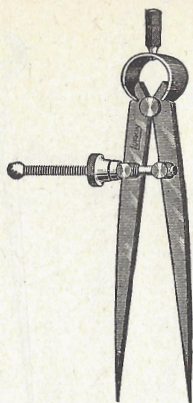
Number

Price, Each

67 Universal Bevel..... \$2.25

Packing: One in a box
Weight each: No. 66—2 ozs.; No. 67—4 ozs.

NOTE: Steel Protractor No. 893—See page 58.



"Quick Nut"

"Banner" Spring Dividers**With Solid Nut****With "Quick Nut"**

Spring Dividers are the kind most widely used. In our Spring Dividers each part is made of steel best suited to the purpose. The points are properly hardened. The stiff, flat bow spring insures reliability. These Dividers are correct in shape and size and have a fine, uniform finish. All have thumb attachment.

The "Quick Nut" is designed for making quick adjustments. On release of pressure this nut slides freely over the threads of the screw, but on slightest leg pressure grips the screw firmly. It is the best device for the purpose and a marked improvement over the common spring nut, as measurement obtained is positively held. It does not have a spring to become worn as it passes over the threads and does not wear or strip the screw. Our "Quick Nut" Dividers, having this rapid and positive feature, are proving very popular.

**"BANNER" SPRING
DIVIDERS****With Solid Nut**

No.	Size	Price, Each
40—	2½ inch	\$0.80
40—	3 inch	.85
40—	4 inch	.90
40—	5 inch	1.00
40—	6 inch	1.05
40—	8 inch	1.35
40—	10 inch	1.65
40—	12 inch	1.80

**"BANNER" SPRING
DIVIDERS****With "Quick Nut"**

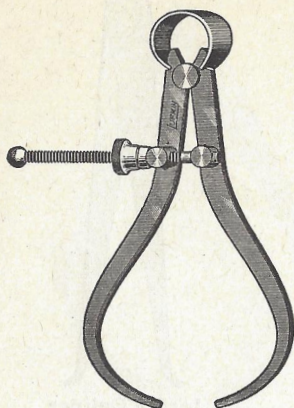
No.	Size	Price, Each
50—	2½ inch	\$1.00
50—	3 inch	1.05
50—	4 inch	1.10
50—	5 inch	1.15
50—	6 inch	1.20
50—	8 inch	1.50
50—	10 inch	1.80
50—	12 inch	2.00

Packing: Three in a box

Weight per doz.: 2½-inch ½ lb.; 3-inch ¾ lb.; 4-inch 1¼ lbs.;
5-inch 1½ lbs.; 6-inch 2¼ lbs.; 8-inch 4 lbs.; 10-inch 5¾ lbs.; 12-inch 7¾ lbs.

Duplicate Parts of "Banner" Spring Calipers and Dividers

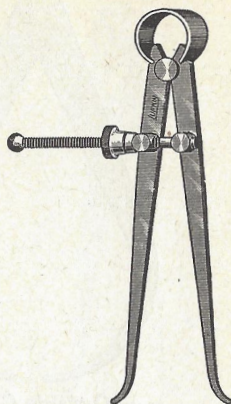
Part	Price, Each	Part	Price, Each
Screw and Ball.....	\$0.20	Leg.....	\$0.30
Spring with Thumb Attachment (for Nos. 40 and 50).....	.50	Spring (For Nos. 41, 51, 42 and 52).....	.30
Solid Nut.....	.15	Jam Washer.....	.15
"Quick Nut".....	.30	Fulcrum Stud.....	.15



Outside Caliper
Nos. 41 and 51



"Quick Nut"



Inside Caliper
Nos. 42 and 52

"Banner" Outside and Inside Spring Calipers With Solid Nut and with "Quick Nut"

Spring Calipers are the type most widely used. In our Spring Calipers all parts are made of steel best suited to the purpose, and those most subject to wear are properly hardened. Stiff, flat bow spring insures reliability. These Calipers are correct in shape and size and have a fine, uniform finish.

The inside type can be used as a Transfer Caliper, as the legs can be sprung in and withdrawn and when released will spring back to the size calipered.

The "Quick Nut" is designed for making quick adjustments. On release of pressure this nut slides freely over the threads of the screw, but on slightest leg pressure grips the screw firmly. It is the best device for the purpose and a marked improvement over the common spring nut, as measurement obtained is positively held. It does not have a spring to become worn as it passes over the threads and does not wear or strip the screw. Our "Quick Nut" Calipers, having this rapid and positive feature, are proving very popular.

"BANNER" OUTSIDE CALIPERS

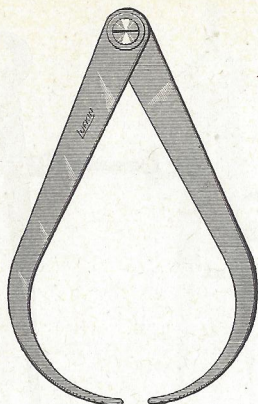
With Solid Nut			With "Quick Nut"		
No.	Size	Each	No.	Size	Each
41-2½	inch	\$0.80	51-2½	inch	\$1.00
41-3	inch	.85	51-3	inch	1.05
41-4	inch	.90	51-4	inch	1.10
41-5	inch	1.00	51-5	inch	1.15
41-6	inch	1.05	51-6	inch	1.20
41-8	inch	1.20	51-8	inch	1.40
41-10	inch	1.65	51-10	inch	1.80
41-12	inch	1.80	51-12	inch	2.00

"BANNER" INSIDE CALIPERS

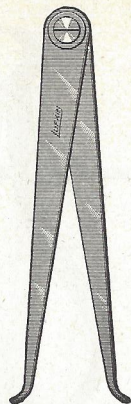
With Solid Nut			With "Quick Nut"		
No.	Size	Each	No.	Size	Each
42-2½	inch	\$0.80	52-2½	inch	\$1.00
42-3	inch	.85	52-3	inch	1.05
42-4	inch	.90	52-4	inch	1.10
42-5	inch	1.00	52-5	inch	1.15
42-6	inch	1.05	52-6	inch	1.20
42-8	inch	1.20	52-8	inch	1.40
42-10	inch	1.65	52-10	inch	1.80
42-12	inch	1.80	52-12	inch	2.00

Packing: Three in a box

Approx. weight per doz.: 2½-inch 2½ lb.; 3-inch 3¼ lb.; 4-inch 1½ lbs.
5-inch 1¾ lbs.; 6-inch 2½ lbs.; 8-inch 4¾ lbs.; 10-inch 5¾ lbs.; 12-inch 8 lbs.



**Outside Caliper
No. 11**



**Inside Caliper
No. 12**

Firm Joint Outside and Inside Calipers

Joint with adjustable tension is the distinctive feature of these Firm Joint Calipers. Lock screw construction enables one to set and hold the legs to any desired tension or friction, always operating smoothly.

These Calipers are of sturdy construction throughout, nicely proportioned and well finished.

All sizes below are length of legs. Actual capacity is about one-quarter greater than this length.

FIRM JOINT OUTSIDE CALIPERS

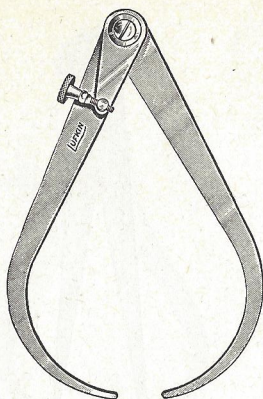
No.	Size	Price, Each
11 —	3 inch	\$0.50
11 —	4 inch	.60
11 —	5 inch	.70
11 —	6 inch	.80
11 —	8 inch	1.00
11 —	10 inch	1.10
11 —	12 inch	1.20
11 —	14 inch	1.80
11 —	16 inch	2.10
11 —	18 inch	2.55
11 —	20 inch	3.00
11 —	24 inch	3.60
11 —	30 inch	6.00
11 —	36 inch	7.20

FIRM JOINT INSIDE CALIPERS

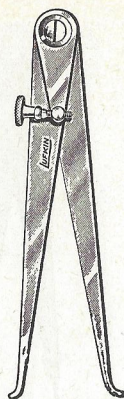
No.	Size	Price, Each
12 —	3 inch	\$0.50
12 —	4 inch	.60
12 —	5 inch	.70
12 —	6 inch	.80
12 —	8 inch	1.00
12 —	10 inch	1.10
12 —	12 inch	1.20
12 —	14 inch	1.80
12 —	16 inch	2.10
12 —	18 inch	2.55
12 —	20 inch	3.00
12 —	24 inch	3.60

Packing: 3 to 6 inch..... 6 in a box
 8 to 12 inch..... 3 in a box
 14 to 20 inch..... 2 in a box
 24 inch and over..... 1 in a package

Size in inches.....	3	4	5	6	8	10	12	14
Wt. each in ounces.....	1	1	2	3	5	7	11	14
Size in inches.....	16	18	20	24	30	36		
Wt. each in lbs.....	1¼	1½	2¼	3⅛	6	7½		



Outside Caliper
No. 21



Inside Caliper
No. 22

Screw Adjusting Firm Joint Calipers

In addition to all the features of the Firm Joint Calipers shown page 64, these have a screw for making the close adjustment.

These Calipers operate smoothly and the head construction enables one to set the legs at any desired degree of tension or friction. Being a firm joint rather than a spring caliper, these are most quickly brought to size, or approximate size, and the feature of a screw with which to make the fine adjustment has certain advantages. They are of sturdy construction throughout, are nicely proportioned and well finished.

All sizes below are length of legs. Actual capacity is about one-quarter greater than this length.

OUTSIDE CALIPERS

Screw Adjusting—Firm Joint

No.	Size	Price, Each
21 —	4 inch	\$1.10
21 —	6 inch	1.20
21 —	8 inch	1.50
21 —	10 inch	1.80
21 —	12 inch	2.10
21 —	14 inch	2.40
21 —	16 inch	2.70
21 —	18 inch	3.00
21 —	20 inch	3.30
21 —	24 inch	4.20

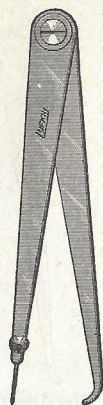
Packing: 4 to 12 inch..... 3 in a box
 14 to 20 inch..... 2 in a box
 24 inch..... 1 in a package

INSIDE CALIPERS

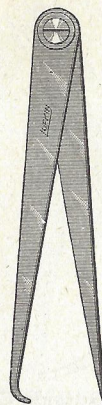
Screw Adjusting—Firm Joint

No.	Size	Price, Each
22 —	4 inch	\$1.10
22 —	6 inch	1.20
22 —	8 inch	1.50
22 —	10 inch	1.80
22 —	12 inch	2.10
22 —	14 inch	2.40
22 —	16 inch	2.70
22 —	18 inch	3.00
22 —	20 inch	3.30
22 —	24 inch	4.20

Size in inches.....	4	6	8	10	12
Weight each in ozs.....	2	3	6	8	13
Size in inches.....	14	16	18	20	24
Weight each in lbs.....	1	1½	1¾	2½	3½



No. A-17



No. 17

Firm Joint Hermaphrodite Calipers

This type of Caliper is used principally in laying out work, locating centers, etc.

A distinctive feature of these Calipers is the adjustable joint. Like other Firm Joint Calipers, they have lock screw construction in the head, enabling one to set and hold the legs to any desired tension or friction. They are of sturdy construction throughout, smooth working, nicely proportioned and well finished.

All sizes given below are length of legs. Actual capacity is about one-quarter greater than this length.

Number A-17 has adjustable point.

FIRM JOINT HERMAPHRODITE CALIPERS

With Adjustable Point

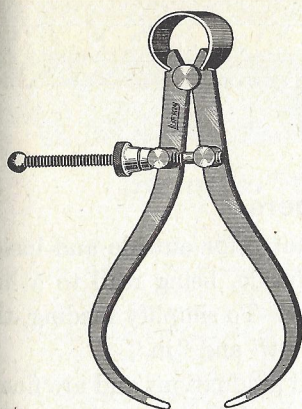
No.	Size	Price, Each
A-17	4-inch	\$0.80
A-17	6-inch	1.00
A-17	8-inch	1.20

FIRM JOINT HERMAPHRODITE CALIPERS

No.	Size	Price, Each
17	4-inch	\$0.60
17	6-inch .....	.80
17	8-inch	1.00

Packing: Three in a box

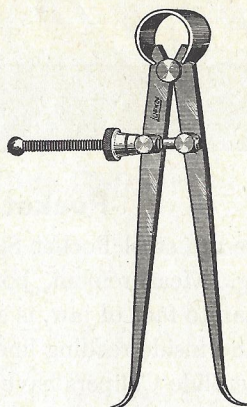
Weight per doz.: 4-inch $1\frac{1}{4}$ lbs.; 6-inch $2\frac{1}{2}$ lbs.; 8-inch $3\frac{1}{4}$ lbs.



**Outside Thread Caliper
No. 44**



"Quick Nut"



**Inside Thread Caliper
No. 45**

Thread Calipers

These are Spring Calipers used for taking measurements of outside and inside screw threads. Points are suitably shaped to work in threads. In all other respects these are identical with our general purpose "Banner" Spring Calipers.

Parts most subject to wear are properly hardened. All parts are well proportioned and nicely finished. Stiff, flat bow spring insures reliability.

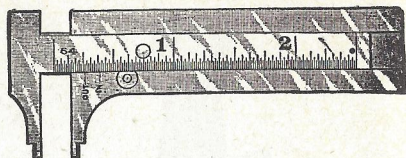
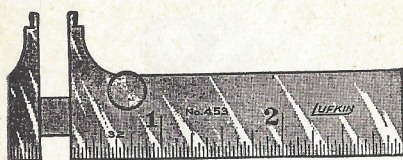
The "Quick Nut" is designed for making quick adjustments. It is the best device for this purpose and a marked improvement over the common spring nut. Measurement is not only quickly obtained, but positively held. On release of pressure this nut slides freely over the threads of the caliper screw, but on slightest leg pressure grips that screw firmly.

No.	Size		With Solid Nut	With "Quick Nut"
			Price, Each	Price, Each
44	4 inch.	Outside Thread Caliper	\$0.90	\$1.10
44	5 inch.	Outside Thread Caliper	1.00	1.15
44	6 inch.	Outside Thread Caliper	1.05	1.20

No.	Size		With Solid Nut	With "Quick Nut"
			Price, Each	Price, Each
45	4 inch.	Inside Thread Caliper	\$0.90	\$1.10
45	5 inch.	Inside Thread Caliper	1.00	1.15
45	6 inch.	Inside Thread Caliper	1.05	1.20

NOTE: Nos. 44 and 45 are furnished with Solid Nut unless "Quick Nut" is specified.

Packing: Three in a box
Weight each: 4-inch 1 oz.; 5-inch 2 ozs.; 6-inch 3 ozs.



Pocket Slide Calipers

These are steel Pocket Slide Calipers suitable for outside and inside calipering. Measurement, both outside and inside, being read to a line rather than to face of jaw, is an aid to accuracy. To simplify reading, the outside and inside reading lines are marked "out" and "in."

These Slide Calipers have machine divided graduations and are finely finished. They can be locked, securely setting the slide at any point. This lock is readily set and released by the same hand in which the tool is held. The slide has stop so cannot be entirely withdrawn or lost out.

	On 3-inch and 7 cm.	On 5 & 6-inch & 12 cm.
Depth of jaws	$1\frac{1}{16}$ inch (17 mm.).	$1\frac{1}{16}$ inch (36 mm.).
Width of nibs, closed . .	$\frac{1}{8}$ inch (3 mm.).	$\frac{1}{4}$ inch (6 mm.).

Number Marked English Only Price, Each

453	3-inch. Pocket Slide Caliper. Calipering capacities: Outside $2\frac{1}{8}$, inside $2\frac{1}{4}$ inches. Graduation: Slide 64ths inch. Stock 32nds inch.	\$4.00
455	5-inch. Pocket Slide Caliper. Calipering capacities: Outside $3\frac{1}{16}$, inside 4 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch.	5.00
456	6-inch. Pocket Slide Caliper. Calipering capacities: Outside $4\frac{3}{4}$, inside 5 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch.	7.00

Marked Metric Only

453M	7 centimeter. Pocket Slide Caliper. Calipering capacities: Outside 54, inside 57 millimeters. Graduation: Slide $\frac{1}{2}$ millimeters. Stock millimeters.	\$4.00
455M	12 centimeter. Pocket Slide Caliper. Calipering capacities: Outside 97, inside 103 millimeters. Graduation: Slide $\frac{1}{2}$ millimeters. Stock millimeters.	5.00

Marked English and Metric

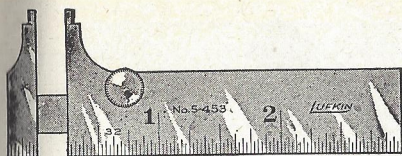
453EM	3-inch (7 cm.). Pocket Slide Caliper. Graduation: Slide, one edge 64ths inch, one edge $\frac{1}{2}$ mm. Stock 32nds inch.	\$4.00
455EM	5-inch (12 cm.). Pocket Slide Caliper. Graduation: Slide, one edge 64ths inch, one edge $\frac{1}{2}$ mm. Stock 32nds inch.	5.00

Packing: One in a box. Weight each: 3-inch 1 oz.; 5-inch 3 ozs.; 6-inch 5 ozs.

Soft Leather Cases for Pocket Slide Calipers

3-inch size. . . . \$0.35 5-inch size. . . . \$0.45 6-inch size. . . . \$0.55 each

NOTE: Stainless Steel Pocket Slide Calipers—See page 69.



Stainless Steel Pocket Slide Calipers Rust-Proof

These Pocket Slide Calipers, being of high grade genuine Stainless Steel, are rust and stain-proof, a very desirable feature especially in this tool.

In pattern these are identical with our other Pocket Slide Calipers, and have the same standard features, as follows:

Are suitable for outside or inside calipering and, for both, read to a line, these lines clearly lettered "Out" and "In."

Have machine divided graduations and are finely finished.

Have lock, operated by thumb of same hand in which the tool is held, and securely setting the slide at any point.

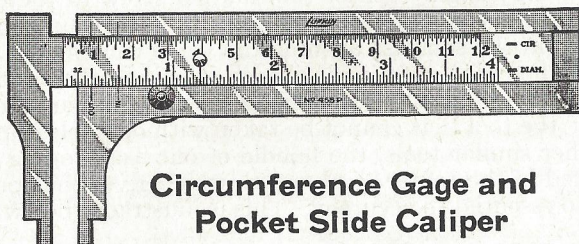
Slide has stop, so cannot be entirely withdrawn or lost out.

Depth of jaws..... On S-453... $1\frac{1}{16}$ inch. On S-455... $1\frac{7}{16}$ inch.

Width of nibs, closed..... On S-453... $\frac{1}{8}$ inch. On S-455... $\frac{1}{4}$ inch.

Number	Price, Each
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S-453 3-inch. Stainless Steel Pocket Slide Caliper. Calipering capacities: Outside $2\frac{1}{8}$, inside $2\frac{1}{4}$ inches. Graduation: Slide 64ths inch. Stock 32nds inch.....	\$6.75
S-455 5-inch. Stainless Steel Pocket Slide Caliper. Calipering capacities: Outside $3\frac{13}{16}$, inside 4 inches. Graduation: Slide, one edge 32nds, one edge 64ths inch. Stock 32nds inch.....	8.00



Circumference Gage and Pocket Slide Caliper

This is a standard pattern steel Pocket Slide Caliper but carrying circumference as well as standard measurement on the slide. Lower edge of slide is graduated standard inches to 32nds; upper edge circumference inches to 16ths. Stock is graduated 5 inches to 32nds.

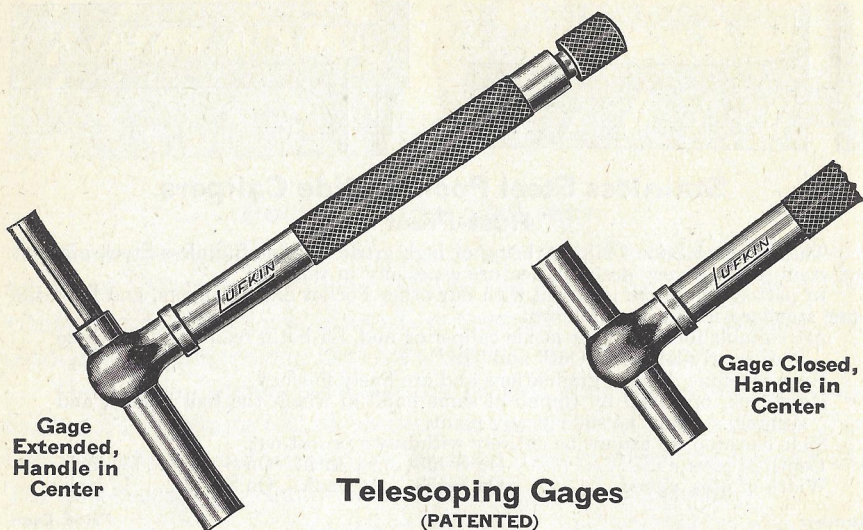
Applying this Caliper to diameters, outside or inside, circumferences as well as diameters can be read directly. Jaws being $1\frac{1}{16}$ inch deep, this tool will caliper a cylinder up to $2\frac{3}{4}$ -inch diameter. Width of nibs when closed is $\frac{1}{4}$ -inch.

With this Slide Caliper all measurements are read to a line rather than to face of jaw, and the reading lines are clearly marked "out" and "in." These features make for accurate measuring.

This Caliper has convenient lock, also has slide stop. It has machine divided graduations and is finely finished.

Number	Price, Each
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455P 5-inch. Circumference Gage and Pocket Slide Caliper..... Calipering capacities: Outside $3\frac{13}{16}$, inside 4 inches of diameter. Packing: One in a box. Weight each: 3-inch 1 oz.; 5-inch 3 ozs.	\$5.00
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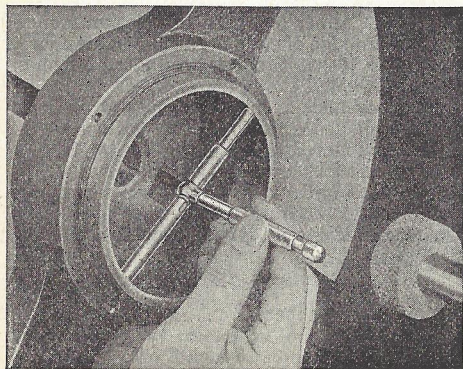


Using a Telescoping Gage the inside size of slots or holes is quickly and accurately obtained. The measurement, down to one thousandth inch or less, is then taken from the Gage with a Micrometer.

Our Telescoping Gages consist of a handle and two plungers, one telescoping into the other, and both under constant spring tension. Plungers can be locked by slight turn of the knurled screw in the end of the handle. The ends of the plungers are hardened and ground to a radius, giving clearance in the smallest opening the Gage will enter.

With the plungers telescoping into each other and the handle adjustable as to position on the extended tool, there is no measurement within the capacity of the tool that cannot be taken with our Telescoping Gage.

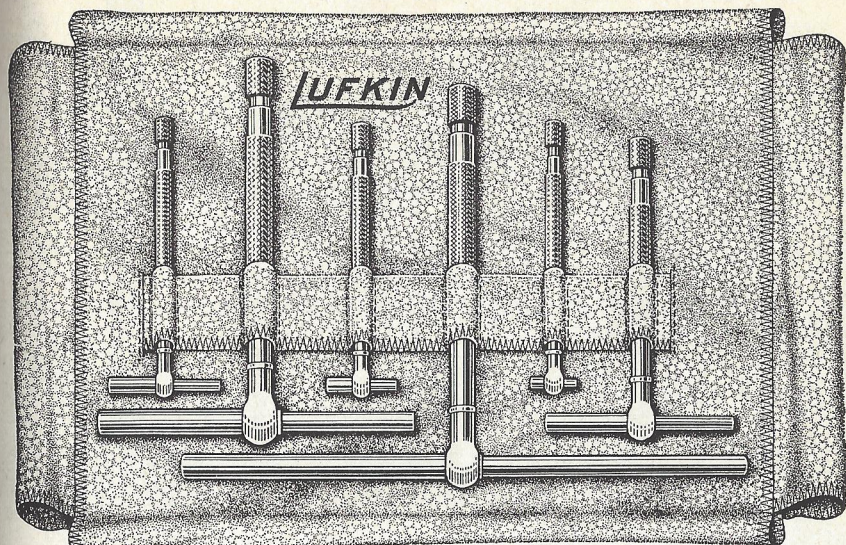
Unlike other similar tools, the handle of our Telescoping Gage can always be locked in the center of plungers, which gives that perfect balance and feel so essential to accuracy. This is illustrated below.



An Outstanding Feature of *LUFKIN* Telescoping Gages

In this operation on a blanking die, note the position of handle. Even though the Gage is not fully extended, its handle is just where it should be, in the center of the tool. Thus perfect balance is always maintained, giving accurate results.

**FURTHER DESCRIPTION AND
LISTINGS—SEE PAGE 71**



Complete Set No. 79L
Range: 5/16 to 6 Inches

Telescoping Gages (CONTINUED)

Our Telescoping Gages are made in six sizes. The smallest will enter a $\frac{5}{16}$ inch hole; the largest expands to 6 inches. Five-sixteenths inch is a smaller opening than can be measured by any other Gage of this type.

Method of Use

Compress plungers, then lock them by turning screw in handle.

Insert Gage into hole, then release lock.

(The plungers will expand themselves to exact size of hole or slot.)

Then lock plungers, remove the Gage, and measure it with a Micrometer.

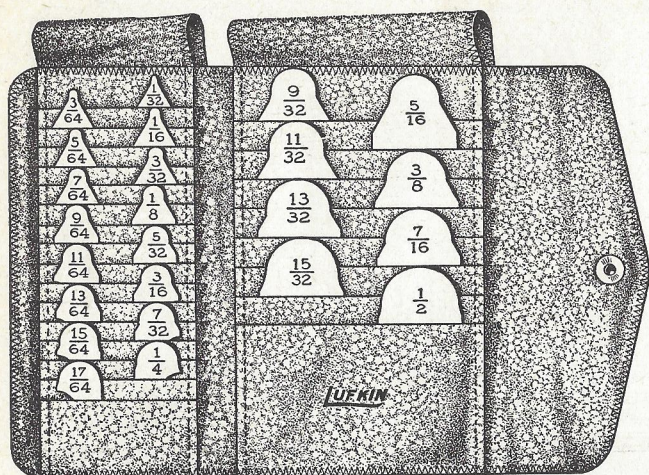
Individual Telescoping Gages

Gage Number		Weight, Each	Price, Each
79AA	Telescoping Gage. Range: $\frac{5}{16}$ to $\frac{1}{2}$ inch.....	$\frac{1}{2}$ oz.	\$1.80
79A	Telescoping Gage. Range: $\frac{1}{2}$ to $\frac{3}{4}$ inch.....	$\frac{1}{2}$ oz.	1.80
79B	Telescoping Gage. Range: $\frac{3}{4}$ to $1\frac{1}{4}$ inches.....	$\frac{1}{2}$ oz.	2.10
79C	Telescoping Gage. Range: $1\frac{1}{4}$ to $2\frac{1}{8}$ inches.....	1 oz.	2.40
79D	Telescoping Gage. Range: $2\frac{1}{8}$ to $3\frac{1}{2}$ inches.....	3 ozs.	3.00
79E	Telescoping Gage. Range: $3\frac{1}{2}$ to 6 inches.....	$3\frac{1}{2}$ ozs.	3.60

Sets of Telescoping Gages

Set Number		Weight, Each	Price of Set
79L	Complete Set. Range: $\frac{5}{16}$ to 6 inches.....	10 ozs.	\$16.20
	Six Gages in Red Leatherette Case, as illustrated above.		
	Includes one each Nos. 79AA, 79A, 79B, 79C, 79D, 79E.		
79M	Small Set. Range: $\frac{5}{16}$ to $2\frac{1}{8}$ inches.....	4 ozs.	9.10
	Four Gages in Red Leatherette Case.		
	Includes one each Nos. 79AA, 79A, 79B, 79C.		

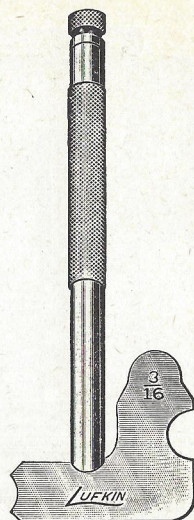
Packing: One only or one set in a box.



Set No. 77C

Radius Gages

(PATENTED)



Holder No. 20

But a few of the many applications of Radius Gages (otherwise known as Fillet Gages) are shown on next page. Such Gages are used by tool and diemakers, pattern makers, templet layout men, screw machine operators and other mechanics.

The following 2 outstanding features are found only in our Radius Gages:

- (1) Each blade (or gage) is a separate unit; thus each one can be most conveniently and accurately applied to the work.
- (2) Each blade carries the corresponding external and internal forms, the practical combination.

In our Radius Gages, each of the steel blades or gages is prominently marked with its radius, and all the gages comprised in a Set are put up in an attractive and durable leatherette folder. This folder insures proper protection for all and makes most simple and easy the selection of the individual gage wanted.

We Offer Radius Gages in 5 Different Sets, Their Contents as Follows:

- (77A) 16 Gages....Radii from $\frac{1}{32}$ to $\frac{1}{64}$ inch by 64ths.
- (77B) 8 Gages....Radii from $\frac{9}{32}$ to $\frac{1}{2}$ inch by 32nds.
- (77C) 24 Gages....Sets 77A and 77B combined.
- (77D) 16 Gages....Radii from $\frac{1}{32}$ to $\frac{1}{2}$ inch by 32nds.
- (77E) 8 Gages....Radii from $\frac{5}{16}$ to 1 inch by 16ths.

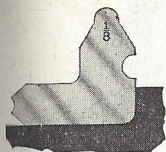
Radius Gage Holder

Not regularly furnished with Sets. If wanted order as "No. 20 Holder."

Our Holder or Handle for Radius Gage Blades is especially well suited to its work. It is four inches long and enables one to gage nicely even in small and out-of-the-way places. Blade is placed in either the 30 or 45 degree slot of this Holder. It is then securely held, not only at either of these angles, but also when sharply cocked to either side. Knurled nut at other end of Holder rigidly clamps the blade or gage.

FOR LISTINGS SEE NEXT PAGE

A Few of the Many Uses of LUFKIN Radius Gages



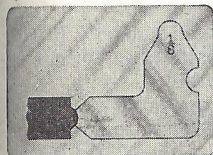
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View No. 1: Shows gage used to determine the radius of inside corners or fillets for one-fourth or less of a circle. Straight sides of gage are at 90 degrees and can be used for checking location of radius.

View No. 2: Shows gage used to determine the radius of outside corners. Also shows whether sides are at 90 degrees and tangent to circle.



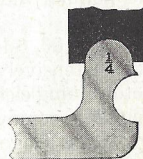
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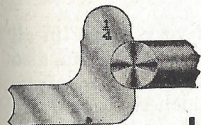
3

View No. 3: Shows work being checked on a piece of glass. Also checks any other convex parts, where radius is one-fourth or more of circle, that have projections which will not permit the use of gage as in Views 2 and 5.

View No. 4: Shows use of gage on concave cutter of one-half or less of circle. This gage can be used to check the radius shown in View No. 1, but will not show the relation of radius to sides.



4



5

View No. 5: Checks one-half of a circumference.

Listings of Radius Gages and Holder

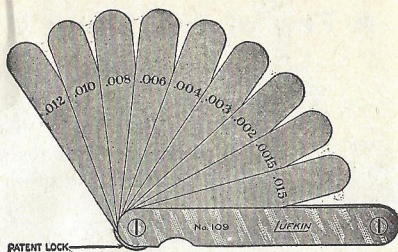
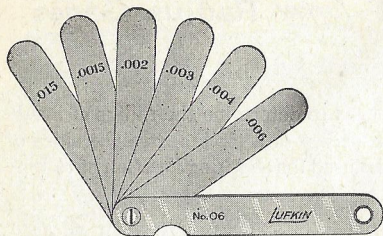
(Descriptions on page 72)

Set No.		Price per Set
77A	Radius Gage Set. Complete with Leatherette Folder. 16 gages. Radii from $\frac{1}{32}$ to $\frac{17}{64}$ inch by 64ths	\$ 4.00
77B	Radius Gage Set. Complete with Leatherette Folder. 8 gages. Radii from $\frac{9}{32}$ to $\frac{1}{2}$ inch by 32nds	2.50
77C	Radius Gage Set. Complete with Leatherette Folder. 24 gages. (Consists of Sets 77A and 77B combined.) Radii from $\frac{1}{32}$ to $\frac{1}{4}$ inch by 64ths, and $\frac{9}{32}$ to $\frac{1}{2}$ inch by 32nds. ...	6.50
77D	Radius Gage Set. Complete with Leatherette Folder. 16 Gages. Radii from $\frac{1}{32}$ to $\frac{1}{2}$ inch by 32nds	4.50
77E	Radius Gage Set. Complete with Leatherette Folder. 8 gages. Radii from $\frac{9}{16}$ to 1 inch by 16ths	24.00
No. 20	Holder Only for all above Radius Gages .....	.75 each
	$\frac{1}{64}$ th Inch Radius Gage Blade .....	.40 each
	(Blade for this radius being available, it is here listed separately, because this size is not included in any of the Sets listed above.)	

Extra Blades (or Gages) for Above Sets

From $\frac{1}{32}$ to $\frac{17}{64}$ inch	\$0.40 each
From $\frac{9}{32}$ to $\frac{1}{2}$ inch .....	.45 each
From $\frac{9}{16}$ to 1 inch, i.e. the following large sizes: $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $\frac{15}{16}$ and 1 inch	3.00 each

Packing: One set in a box. Wt. per Set: 77A, 3 ozs. 77B, 6 ozs. 77C & 77D, 8 ozs. 77E, 2 lbs.



Thickness Gages

All (except No. 06) with Patent Lock

Thickness Gages, also called Feeler Gages, are extensively used not only in the manufacture and servicing of automobiles, but by toolmakers, machinists and others in jig and fixture work, in the making of gages, in experimental work, etc.

All Gages on this page have leaves of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness. These leaves are of the popular width and length. All of these Gages have regular case into which the leaves fold.

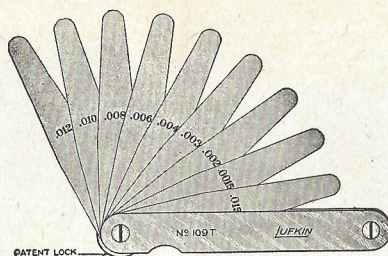
No. **06**, 6-leaf, is our lowest priced Gage, yet a good reliable tool with regular case. It is extensively used by garage mechanics, car owners, truck and tractor operators in determining clearance of tappets, fitting pistons, and adjusting spark gap. It is a simple matter to remove screw stud and insert a new leaf in case. Other end of case has an eyelet, so the Gage may be carried on key ring or hung up.

Nos. **109**, **109M** and **116M** have patent lock feature which is very handy in all work. By means of a lock nut any one or more leaves can be locked in any position, also all leaves can be securely held in the case when not in use. Lock also permits use of the Gage in its overall length, which, with leaf extended and locked, is 6 inches. Lock holds blade firmly, making it easy to insert in any opening. It also reduces the chance of error. Lock is operated by same hand in which the Gage is held.

All with Leaves 3 Inches Long, 1/2 Inch Wide

Number		Price, Each
06	6-Leaf Thickness Gage. Thicknesses: .0015, .002, .003, .004, .006, .015 inch.....	\$0.90
109	9-Leaf Thickness Gage. Thicknesses: .0015, .002, .003, .004, .006, .008, .010, .012, .015 inch..	1.50
109M	9-Leaf Metric Thickness Gage. Thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25 millimeters. Combined thickness 1 mm. Leaves approximately 12 mm. wide, 7½ cm. long	1.50
116M	16-Leaf Metric Thickness Gage. Thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25, .30, .35, .40, .45, .50 millimeters and two leaves of 1 mm each. Combined thickness 5 mm. Leaves approximately 12 mm. wide, 7½ cm. long	2.50

Packing: No. **06**, Six in a box
All others—One in a box, three in a carton



Thickness Gages with Tapered Leaves

With Patent Lock

These Thickness Gages, all having leaves tapered to $\frac{1}{4}$ inch width, are especially popular because they give access to narrow openings. Aside from the leaves being tapered, these Gages are identical with those of similar numbers on page 74.

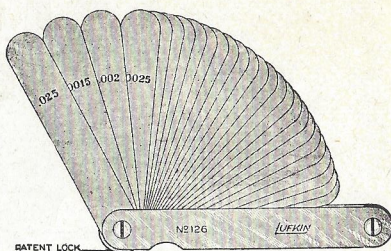
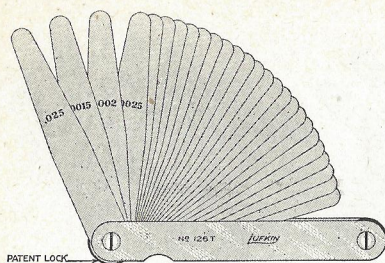
All Gages below have leaves of tempered steel, ground to exact thickness, individually tested and each one clearly marked with its thickness. These leaves are of the popular length, 3 inches. All Gages have regular case into which the leaves fold.

Patent lock is a feature of these Gages, always convenient and especially valuable in some classes of work. By means of a lock nut any one or more leaves can be locked in any position or all leaves securely held in the case when not in use. Lock also permits use of the Gage in its overall length, which, with leaf extended and locked, is 6 inches. Lock holds blade firmly making it easy to insert in any opening. It also reduces the chance of error. Lock nut is operated by same hand in which the Gage is held.

All with Leaves 3 Inches Long, Tapered to $\frac{1}{4}$ Inch Wide

Number		Price Each
109T	9-Leaf Thickness Gage. With tapered leaves. Thicknesses: .0015, .002, .003, .004, .006, .008, .010, .012, .015 inch.	\$1.50
110T	10-Leaf Thickness Gage. With tapered leaves. Thicknesses: .0015, .002, .0025, .003, .004, .006, .008, .010, .012, .015 inch. (Same as No. 109T but having in addition leaf .0025)	1.75
109TM	9-Leaf Metric Thickness Gage. With tapered leaves. Thicknesses: .04, .05, .06, .07, .08, .10, .15, .20, .25 millimeters. Combined thickness 1 mm. Leaves approximately $7\frac{1}{2}$ cm. long, tapered to $6\frac{1}{2}$ mm.	1.50

Packing: One in a box, three in a carton



Thickness Gages

With Patent Lock

With Tapered Leaves.

With Straight Leaves.

A feature of these Gages is the wide range of thicknesses they offer. Nos. **126** and **126T** have leaves increasing in thickness by one-thousandth inch from .002 to .025 inclusive and carry also leaves .0015 and .0025 inch. No. **122** runs by thousandths from .004 to .025 inch. No. **126T**, because of its range of thicknesses and also having tapered leaves giving access to narrow openings, will handle practically any work required of a Thickness Gage.

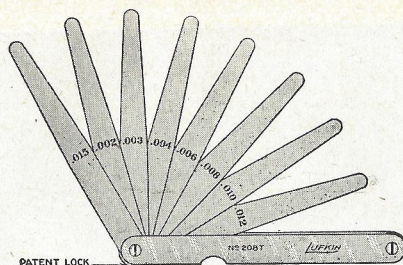
All Gages on this page have leaves of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness. Leaves of Nos. **126** and **122** are $\frac{1}{2}$ inch wide; those of No. **126T** are tapered to $\frac{1}{4}$ inch width. All three have regular case into which the leaves fold.

Patent lock is a feature of these Gages. By means of a lock nut any one or more leaves can be locked in any position or all securely held in the case when not in use. Lock also permits use of the Gage in its overall length, which, with leaf extended and locked, is 6 inches. Lock holds blade firmly, making it easy to insert in any opening. It also reduces the chance of error. Lock nut is operated by same hand in which the Gage is held.

All with Leaves 3 Inches Long

Number		Price Each
126T	26-Leaf Thickness Gage. With tapered leaves. Thicknesses: .0015, .002, .0025, .003, .004, .005, .006, .007, .008, .009, .010, .011, .012, .013, .014, .015, .016, .017, .018, .019, .020, .021, .022, .023, .024, .025 inch.	\$3.50
126	26-Leaf Thickness Gage. With straight leaves. Exactly same thicknesses as No. 126T but leaves not tapered.	3.50
122	22-Leaf Thickness Gage. With straight leaves. Thicknesses: .004, .005, .006, .007, .008, .009, .010, .011, .012, .013, .014, .015, .016, .017, .018, .019, .020, .021, .022, .023, .024, .025 inch.	2.50

Packing: One in a box, three in a carton



Thickness Gages with Tapered Leaves

With Patent Lock

These Thickness Gages have longer leaves ($4\frac{1}{2}$ and 6 inches) therefore are best for work requiring long reach. They are especially popular with motor mechanics for determining clearance between pistons and cylinder walls. On such work the patent lock is very convenient, as leaf may be locked making it easiest to insert and, in line with the case, giving overall reach of 9 inches with Gage No. 208T and of 12 inches with 308T. Both have leaves tapered to $\frac{1}{4}$ -inch width, giving access to narrow openings.

All leaves are of tempered steel, ground to exact thickness, individually tested, and each one clearly marked with its thickness. All Gages have regular case into which the leaves fold.

Lock nut, operated by same hand in which Gage is held, will lock any one or more leaves in any position, easiest to use and reducing chance of error. It also will securely hold all leaves in case when not in use.

Number		Price, Each
208T	8-Leaf Thickness Gage. With tapered leaves, $4\frac{1}{2}$ inches long. Thicknesses: .002, .003, .004, .006, .008, .010, .012, .015 inch. Overall length with leaf extended and locked, 9 inches.....	\$2.50
308T	8-Leaf Thickness Gage. With tapered leaves, 6 inches long. Thicknesses: Same as No. 208T. Overall length with leaf extended and locked, 12 inches.....	3.00
Packing: One in a box		

Thickness Gage Leaves Only

For use as separate pieces or for replacing Leaves in Gages.

In ordering 3-inch Leaves.....Specify thickness and "straight" or "tapered."
In ordering $4\frac{1}{2}$ and 6-inch Leaves.....Specify thickness.

Length	Price, Each
3 inch Leaves. Straight or tapered.....	\$0.25
$4\frac{1}{2}$ inch Leaves. Tapered Only.....	.40
6 inch Leaves. Tapered Only.....	.50

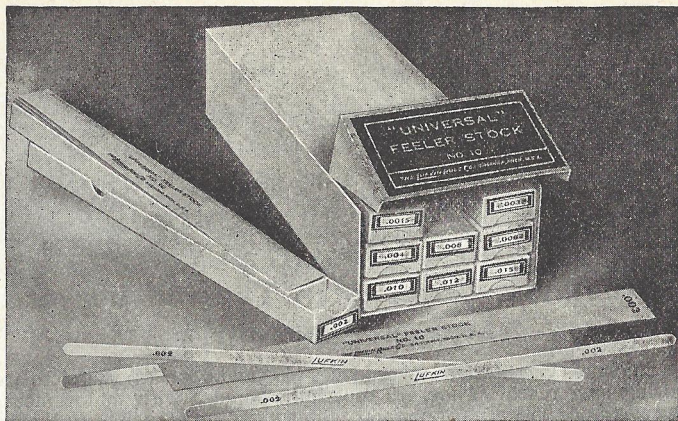
Ground Thickness Gage Stock

This is offered to meet the demand for Ground Thickness Gage Stock Only, in long pieces. This Stock we supply in any of our standard thicknesses, $\frac{1}{2}$ inch wide, and in lengths listed below. Each of these pieces is marked with its thickness.

Always Specify "Ground Stock" and state Thickness and Length.

Length	Price, Each
6-inch Pieces.....	\$0.25
12-inch Pieces.....	.50
18-inch Pieces.....	.75

NOTE: No. 10 "Universal" Feeler Stock—See page 78.



"Universal" Feeler Stock—No. 10 In 1-Foot Pieces

Clean Stock.

Handy Length.

Popular Priced.

In the manufacture and servicing of automobiles this Feeler Stock is most extensively used, practically a necessity. It is used in determining the clearance of tappets, fitting pistons, adjusting spark gap, ring groove clearance, gear play, etc. It is employed in other shops also by toolmakers and machinists, and in experimental work.

Each piece of this Feeler Stock has both ends rounded and marked with its thickness. This Stock is $\frac{1}{2}$ inch wide and each 1-foot piece is in individual envelope, flat and ready to hand out. This prevents the waste due to rust and stain from handling, and to breaking from a coil.

No. 10 Feeler Stock.

Packing: Twelve 1-foot pieces of one thickness
in a box, each piece in individual envelope

Made in the following thicknesses

Thickness in inches	Price per foot
.0015	\$0.34
.002	.34
.0025	.34
.003	.34
.004	.24
.005	.24
.006	.24
.007	.20
.008	.20

Thickness in inches	Price per foot
.009	\$0.20
.010	.20
.011	.20
.012	.20
.013	.20
.014	.20
.015	.20
.016	.20
.017	.20

Thickness in inches	Price per foot
.018	\$0.20
.019	.20
.020	.20
.021	.20
.022	.20
.023	.20
.024	.20
.025	.20

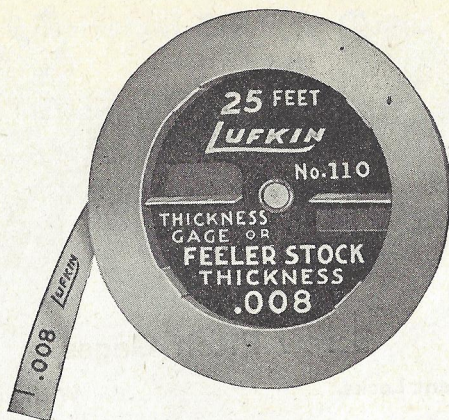
No. 10 Assortment of Feeler Stock Price per Assortment **\$27.60**

**Each Assortment consists of 9 boxes of 12 1-ft. pieces per
box, one box of each of the following thicknesses:**

.0015, .002, .003, .004, .006, .008, .010, .012, .015

(The 9 boxes comprising this assortment are in a handy open end carton, as illustrated above)

NOTE: Ground Thickness Gage Stock—See page 77.



"Universal" Feeler Stock—No. 110 In 25-Foot Roll in Metal Case

Offered in Sixteen Popular Thicknesses

Accurate, clean, smooth-edged Thickness Gage or Feeler Stock, $\frac{1}{2}$ inch wide, in 25-foot rolls, in metal case. This Feeler Stock carries Lufkin name and cutting line each foot, and is prominently marked with its thickness every six inches throughout.

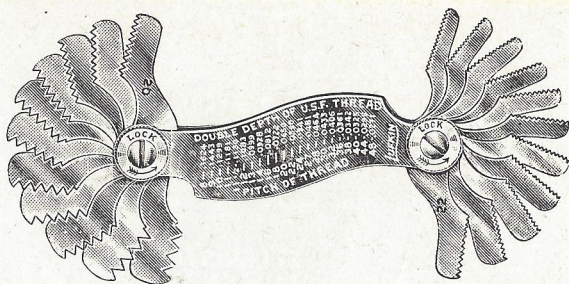
The metal case or holder is of improved pattern. It is of a size best to handle and to keep the stock in proper condition. From it the stock is always easily withdrawn; the revolving core makes it simple to recoil any unused portion.

This is stock as required by automobile mechanics in fitting pistons, setting tappets, adjusting spark gap, gear play, etc., and in experimental work by tool-makers and machinists everywhere. In our metal case it is easiest to carry on hand by dealer or at tool crib, and most readily withdrawn and cut to length by distributor or mechanic.

No. 110 Feeler Stock (Specify thickness also).

Thickness in inches		Price of 25-Foot Roll in Case	
.0015	25 feet....	Price per foot 34c.....	\$8.50
.002	25 feet....	Price per foot 34c.....	8.50
.0025	25 feet....	Price per foot 34c.....	8.50
.003	25 feet....	Price per foot 34c.....	8.50
.004	25 feet....	Price per foot 24c.....	6.00
.005	25 feet....	Price per foot 24c.....	6.00
.006	25 feet....	Price per foot 24c.....	6.00
.007	25 feet....	Price per foot 20c.....	5.00
.008	25 feet....	Price per foot 20c.....	5.00
.009	25 feet....	Price per foot 20c.....	5.00
.010	25 feet....	Price per foot 20c.....	5.00
.011	25 feet....	Price per foot 20c.....	5.00
.012	25 feet....	Price per foot 20c.....	5.00
.013	25 feet....	Price per foot 20c.....	5.00
.014	25 feet....	Price per foot 20c.....	5.00
.015	25 feet....	Price per foot 20c.....	5.00

Packing: 25-foot roll in case in a box. Weight each: Approximately $\frac{1}{2}$ lb.



Screw Pitch Gages

With Patent Locks.

Without Locks.

These Gages measure the pitch, or number of threads per inch, of "National" or "U. S. Form" Thread and Sharp "V" Thread.

All have regular case into which the blades fold at each end. Each blade (or leaf) is marked with its pitch. All blades are shaped to quickly measure the inside threads of nuts as well as the outside threads of bolts, screws, etc. On the outside of the case the Double Depth of the U. S. Form Thread is given, this being the recognized standard thread. To obtain the Double Depth of Sharp "V" Threads, for the same pitch, add $\frac{1}{3}$ to the Double Depth given for U. S. Form Thread.

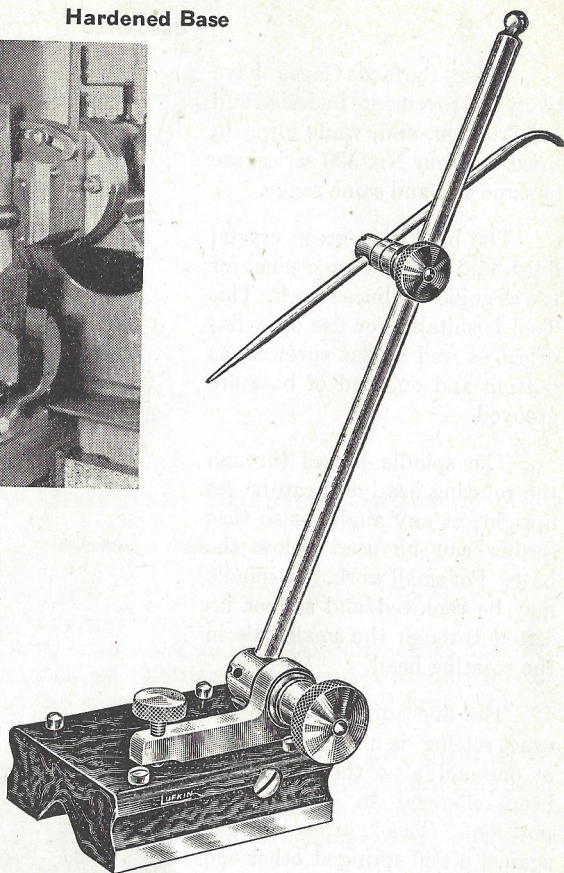
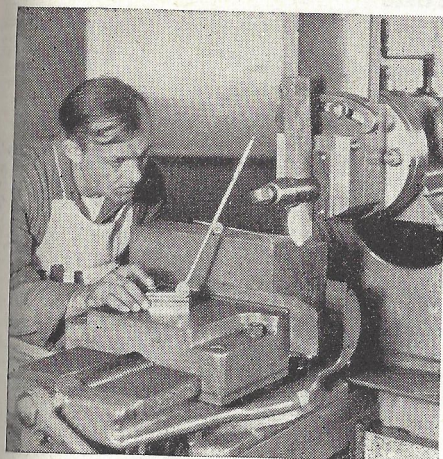
Screw Pitch Gages of Series 74 have patent locks; those of Series 73 are without lock; otherwise the two Series are identical. Lock nut is at both ends and is easily operated by same hand in which the Gage is held. Thus any one or more blades can be locked in any position or all locked in case when not in use. This feature eliminates chances of error, and is especially handy where one pitch is being repeatedly used.

Number		Price, Each
74A	22-Pitch Gage. With Patent Locks. Pitches: 8-9-10-11-11 $\frac{1}{2}$ -12-13-14-16-18-20 22-24-27-28-30-32-36-38-40-44-48.....	\$1.50
73A	22-Pitch Gage. Without Lock. Pitches: Exactly same as Gage No. 74A, above.....	1.25
74B	24-Pitch Gage. With Patent Locks. Pitches: 4-4 $\frac{1}{2}$ -5-5 $\frac{1}{2}$ -6-7-8-9-10-11-11 $\frac{1}{2}$ -12 13-14-16-18-20-22-24-27-28-30-32-36.....	1.75
73B	24-Pitch Gage. Without Lock. Pitches: Exactly same as Gage No. 74B, above.....	1.50
74C	28-Pitch Gage. With Patent Locks. Pitches: 8-9-10-11-11 $\frac{1}{2}$ -12-13-14-16-18-20-22-24-27 28-30-32-36-38-40-44-48-50-56-60-64-72-80.....	2.00
73C	28-Pitch Gage. Without Lock. Pitches: Exactly same as Gage No. 74C, above.....	1.75
74D	28-Pitch Gage. With Patent Locks. Pitches: 3-3 $\frac{1}{4}$ -3 $\frac{1}{2}$ -4-4 $\frac{1}{2}$ -5-5 $\frac{1}{2}$ -6-7-8-9-10-11-11 $\frac{1}{2}$ 12-13-14-16-18-20-22-24-27-28-30-32-36-38.....	2.00
73D	28-Pitch Gage. Without Lock. Pitches: Exactly same as Gage No. 74D, above.....	1.75

Packing: One in a box, six in a carton

Universal Surface Gages

Hardened Base



These Surface Gages embody all latest improvements in design and construction.

Base is well proportioned, hardened, and is finished in mottled blue, with all measuring faces ground and polished. Bottom and one end of base are grooved. Base has four gage pins, for use as guides on linear work.

The spindle is of hollow, rigid steel tubing, and being light, will not, even when used with attachments, cause base to tip. It can be set upright, at any angle, or so that scriber can be used below the base. For small work the spindle may be removed and scriber inserted through the small hole for it in the rotating head. The spindle and scriber holes are kept constantly in alignment by set screws.

The fine adjustment, to get exact setting, is made with the screw at one end, after the spindle has been clamped in approximate position. This fine adjustment screw works against a stiff spring at the other end and allows greater range of adjustment than on any other similar gage.

Length of spindle, as listed, does not include the base.

Bases of Nos. 520A, 520B and 520C are 3¼ inches long

Number		Price, Each
520A	Universal Surface Gage. With 9-inch spindle.....	\$4.75
520B	Universal Surface Gage. With 9 and 12-inch spindles.....	5.25
520C	Universal Surface Gage. With 12-inch spindle.....	5.00
520K	Indicator Attachment For Any Above.....	.90
	(A spindle clamp with hole for holding Indicator.)	
	18-inch Spindle for any above.....	Extra each .90
Packing: One in a box. Weight each: Nos. 520A and 520C, 2¾ lbs.; No. 520B, 3 lbs.		

Universal Surface Gages

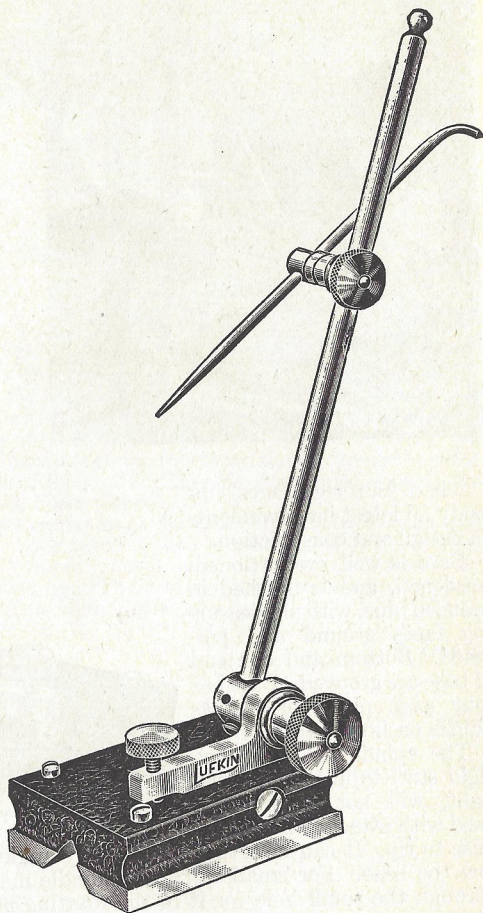
Cast Base

These Surface Gages have many improvements in design and construction, and, while lower in price than our No. 520 series, are of same size and same range.

The base is in green crystal finish and has two gage pins, for use as guides on linear work. This Tool is suitable for use on cylindrical as well as flat surfaces, as bottom and one end of base are grooved.

The spindle passes through the rotating head and can be set upright, at any angle, or so that scriber can be used below the base. For small work, the spindle may be removed and scriber inserted through the small hole in the rotating head.

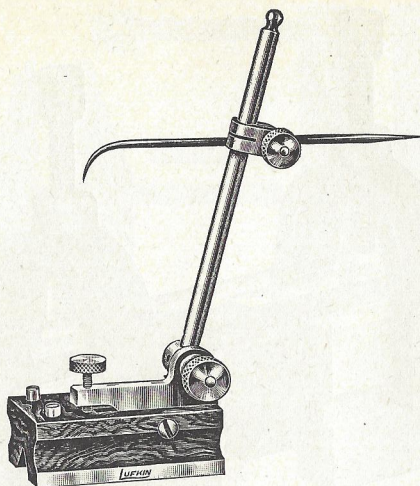
The fine adjustment, to get exact setting, is made with screw at one end, after the spindle has been clamped in approximate position. This screw works against a stiff spring at other end and gives greater range of adjustment than on any other similar Gage.



Length of spindle, as listed, does not include the base.

Bases of Nos. 522A, 522B and 522C are $3\frac{1}{4}$ inches long

Number		Price, Each
522A	Universal Surface Gage. With 9-inch spindle.....	\$3.50
522B	Universal Surface Gage. With 9 and 12-inch spindles.....	4.00
522C	Universal Surface Gage. With 12-inch spindle.....	3.70
520K	Indicator Attachment For Any Above.....	.90
(A spindle clamp with hole for holding Indicator.)		
	18-inch Spindle for any above.....	Extra each .65
Packing: One in a box. Weight each: Nos. 522A and 522C, $2\frac{3}{4}$ lbs.; No. 522B, 3 lbs.		



Toolmakers Universal Surface Gages

Hardened Base

These Surface Gages are especially suitable for light work. They have all the latest improvements in design and construction.

The base is well proportioned, is hardened, and is finished in mottled blue, with all measuring faces ground and polished. Bottom and one end of base are grooved for cylindrical work. Base has two gage pins that can be pushed down for use as guides on linear work.

The spindle passes through the rotating head and can be set upright, at any angle, or so that the scriber can be used below the base. For small work the spindle may be removed and the scriber inserted through the small hole for it in the rotating head. The holes through which spindle and scriber pass are kept in alignment at all times by small set screws.

The fine adjustment, to get exact setting, is made with the screw at one end, after the spindle has been clamped in the approximate position desired. This fine adjustment screw works against a stiff spring at the other end and allows greater range of adjustment than on any other similar Gage.

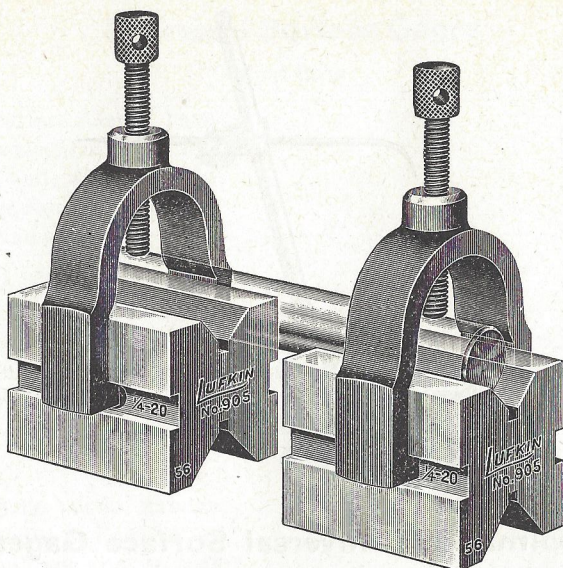
Length of spindle, as listed, does not include the base. The base takes very little space in the tool chest for it is but $1\frac{1}{2}$ inches wide, and its height including rotating head is $1\frac{1}{2}$ inches.

Bases of Nos. **521A**, **521B** and **521C** are $2\frac{1}{8}$ inches long

Number		Price, Each
521A	Toolmakers Surface Gage. With 4-inch spindle.....	\$4.10
521B	Toolmakers Surface Gage. With 4 and 7-inch spindles.....	4.40
521C	Toolmakers Surface Gage. With 7-inch spindle.....	4.15

Packing: One in a box

Weight each: No. **521A**, 12 ozs.; No. **521B**, 14 ozs.; No. **521C**, 13 ozs.



V Blocks and Clamps

Hardened and Ground

V Blocks are designed for use where an extremely accurate set is required. They are especially useful in laying out work in connection with the surface plate or angle iron; milling or grinding work can be firmly held when clamped in the V's of the blocks.

The Blocks are made of tool steel, hardened and ground. The V's are ground central, parallel and square with the ends and sides. The Blocks are made and numbered in pairs, so the V grooves in each pair are always in alignment. The clamps are of steel, drop forged, making them strong and durable yet light weight.

A feature of these V Blocks is the tapped hole through the sides, particularly useful when using the blocks on an angle iron fastened to a lathe face plate or a magnetic chuck. By using a $\frac{1}{4}$ -20 screw, the Block can be securely fastened at any angle desired to the angle iron, without the use of other clamps which would interfere with the work. This applies to all layout work, lathe work, milling, drilling, grinding, etc.

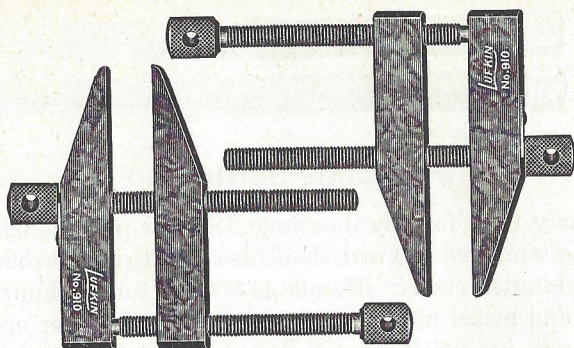
Each Block is about $1\frac{5}{8}$ inches long and $1\frac{1}{4}$ inches square and has clamping capacity of one inch diameter.

Number		Price Per Set
905	Set of V Blocks and Clamps. (2 blocks and 2 clamps per set).....	\$6.75
	(Blocks sold only in sets as they are made in pairs)	

Packing: One set in a box

Weight per set: $1\frac{3}{4}$ lbs.

Extra Clamps only for V Blocks.....Price, each \$0.90



Toolmakers Parallel Clamps

These Clamps are of steel, case-hardened, and are very useful for holding small work together in drilling, tapping, etc. They are so designed as to be strong and rigid and to insure a positive hold. Ends of the jaws are rounded to permit clamping under shoulders or in recesses.

Clip attachment prevents sliding of the loose jaw on the screw. Ours is a flat clip, flush with back of the jaw, which eliminates interference with fingers when opening and closing clamp.

Illustration Shows One Pair (2 Complete Clamps)

Number		Clamping Capacity	Length of Jaws	Price per Pair (2 Clamps)
910A	Pair of Parallel Clamps.....	3/4 inch	1 5/8 inch	\$1.40
910B	Pair of Parallel Clamps.....	1 1/4 inch	2 inch	1.70
910C	Pair of Parallel Clamps.....	1 3/4 inch	2 1/2 inch	2.00
910D	Pair of Parallel Clamps.....	2 1/4 inch	3 inch	2.40
910E	Pair of Parallel Clamps.....	2 3/4 inch	4 inch	3.00
910F	Pair of Parallel Clamps.....	3 1/2 inch	5 inch	4.60

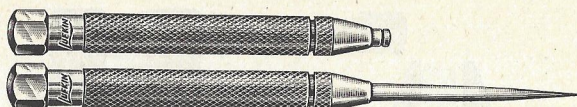
Packing: One pair (2 clamps) in a box

Weight per Pair: 910A, B, C, D, E, F, 3, 6, 10, 18, 30 and 50 ozs. respectively

Parts of Toolmakers Parallel Clamps

When ordering Jaws . . . Specify stock number of Clamp and "Jaw with tapped holes" or "Jaw with holes not tapped."

When ordering Screws . . . Specify stock number of Clamp and "Full threaded Screw" or "Smooth end Screw."



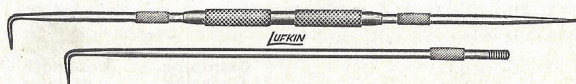
Pocket Scribers

Very handy tools for any mechanic. Scriber point is of best quality steel, properly tempered and with shank designed to hold it solidly in handle by means of knurled chuck. Handle is of steel tubing, knurled to afford secure hold, and nickel plated. Illustrations show Scriber open ready for use, also closed, i.e., with point reversed, inserted and locked into the handle. The hexagon head prevents rolling.

Number		Price Each
87A	Pocket Scriber. Dia. handle $\frac{1}{4}$ inch. Length point $2\frac{3}{8}$ inches.....	\$0.35
87B	Pocket Scriber. Dia. handle $\frac{3}{8}$ inch. Length point $2\frac{7}{8}$ inches.....	.50
	Points Only for Above Scribers. (Specify A or B).....	.15

Packing: Six in a box

NOTE: Blades of Screw Drivers Nos. **187A** and **187B**, listed page 85, will fit handles of Pocket Scribers **87A** and **B**. On such Screw Driver Blades Only, specify "A" or "B," and for their prices see page 85.



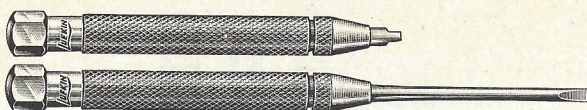
Scribers

These Scribers also are handy tools. Their points are of best quality steel, properly tempered. These points, as well as the stock, have knurled portions for solid finger grip. The stock is nickel plated and of size convenient to hold. All points fit either end of the stock and are threadedly engaged in the stock. The long bent point is particularly valuable in reaching through holes, etc.

Length of Scriber: With short bent point, 9 inches.
With long bent point, 12 inches.

Number		Price Each
88A	Scriber Complete. With 1 straight, 1 long and 1 short bent point.....	\$0.60
88B	Scriber. With 1 straight point and 1 short bent point.....	.45
	Points Only for above Scribers: (Straight Point.....)	.15
	(Short Bent Point.....)	.15
	(Long Bent Point.....)	.20

Packing: Six in a box



Pocket Screw Drivers

Handy vest pocket Screw Drivers. Blade is of best quality steel, properly shaped and tempered. Shank of blade together with knurled chuck of handle most firmly hold the blade, so it cannot come out or turn in the handle. Handle is of steel tubing, knurled to afford secure hold, and nickel plated. Illustrations show Screw Driver ready for use, also with point reversed, inserted and locked into the handle for convenience in carrying. The hexagon head prevents rolling.

Number		Price Each
187A	Screw Driver. Dia. handle $\frac{1}{4}$ inch. Length blade $2\frac{1}{2}$ inches.....	\$0.40
187B	Screw Driver. Dia. handle $\frac{3}{8}$ inch. Length blade 3 inches.....	.50
	Blades Only for above Screw Drivers. (Specify A or B).....	.15

Packing: Six in a box

NOTE: Points of Scribers Nos. 87A and 87B, listed page 84, will fit handles of Screw Drivers 187A and B. On such Scriber Points Only, specify "A" or "B," and for their prices see page 84.



Drive Pin Punches

Listed Individually, Also Set of 8 In Leatherette Case

These Punches are made of best quality tool steel. They are nicely shaped, hardened and polished. Body is knurled to afford good finger grip.

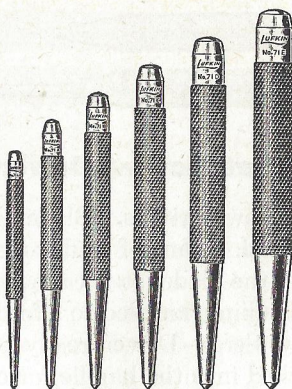
Number		Diameter of Point	Length of Punch	Price Each
72A	Drive Pin Punch.....	$\frac{1}{16}$ inch	$3\frac{3}{8}$ inches	\$0.25
72B	Drive Pin Punch.....	$\frac{3}{32}$ inch	$3\frac{1}{2}$ inches	.25
72C	Drive Pin Punch.....	$\frac{1}{8}$ inch	$3\frac{3}{4}$ inches	.25
72D	Drive Pin Punch.....	$\frac{5}{32}$ inch	4 inches	.25
72E	Drive Pin Punch.....	$\frac{3}{16}$ inch	$4\frac{1}{8}$ inches	.25
72F	Drive Pin Punch.....	$\frac{7}{32}$ inch	$4\frac{3}{8}$ inches	.25
72G	Drive Pin Punch.....	$\frac{1}{4}$ inch	$4\frac{5}{8}$ inches	.25
72H	Drive Pin Punch.....	$\frac{5}{16}$ inch	$4\frac{7}{8}$ inches	.25

72S Set of 8 Drive Pin Punches. In Leatherette Case... Price Per Set \$2.25
Contains one each of above Punches, 72A to 72H inclusive.

Packing: Nos. 72A to 72G, 12 in a box. No. 72H, 6 in a box

No. 72S, 3 Sets in a box

Weight: Set No. 72S, 12 ozs.



Center Punches

Listed Individually, Also Set of 6 in Leatherette Case

These Center Punches are made of fine quality tool steel. They are properly shaped and points carefully ground. These Punches are hardened and polished and have body knurled to afford good finger grip.

Number		Length of Punch	Diameter at Top of Tapered Point	Price Each
71AA	Center Punch.....	3 $\frac{1}{8}$ inches	$\frac{1}{16}$ inch	\$0.25
71A	Center Punch.....	3 $\frac{1}{2}$ inches	$\frac{5}{64}$ inch	.25
71B	Center Punch.....	3 $\frac{7}{8}$ inches	$\frac{3}{32}$ inch	.25
71C	Center Punch.....	4 $\frac{1}{4}$ inches	$\frac{9}{64}$ inch	.25
71D	Center Punch.....	4 $\frac{5}{8}$ inches	$\frac{5}{32}$ inch	.25
71E	Center Punch.....	5 inches	$\frac{3}{16}$ inch	.30

71S Set of 6 Center Punches. In Leatherette Case.... Price Per Set **\$1.75**
Contains one each of above Punches, **71AA** to **71E** inclusive.

Packing: Nos. **71AA** to **71D**, 12 in a box

No. **71E**, 6 in a box

No. **71S**, 3 Sets in a box

Weight: Set No. **71S**, 6 ozs.

Automatic Center Punch

With Adjustable Stroke

An Automatic Center Punch is almost indispensable on fine work and handy for all marking, as it assures accuracy and speed. With this tool but one hand is employed, as hammer is entirely unnecessary. Thus it can be most precisely placed, and slipping and the many other chances of error in the hammer method are avoided.

In the body of this Center Punch there is a simple mechanism, which, when tool is held upright on the work and downward pressure applied, automatically, at the will of the mechanic, strikes the blow. Set at any point, the tension of spring is constant, giving impressions of uniform depth and size.

The force of the blow is regulated by screwing the knurled cap. When completely down the blow is heaviest, as it is screwed upward it decreases. This Punch has an unusually wide range of adjustment, as required for controlling the blow for various metals.

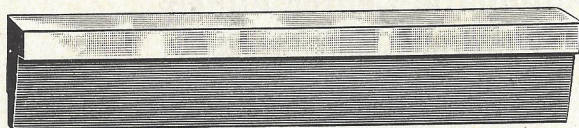
Its diameter is one-half inch; its length, when set for medium stroke, five inches. The body of this Punch is knurled and grooved to give most positive grip. All working parts are properly hardened. Point is easily removed, ground and replaced. Extra points are offered.



Number		Price, Each
1671A	Automatic Center Punch.....	\$2.40
	Extra Points Only for above .....	.20

Packing: One in a box.

Weight each: 3 ounces.



Hold Downs

Made in Five Lengths—2 to 6 Inches

These Hold Downs are of best design to securely hold work flat and without distortion in a vise or on a machine bed. They are used where other methods of clamping are inconvenient and are especially handy for holding thin work.

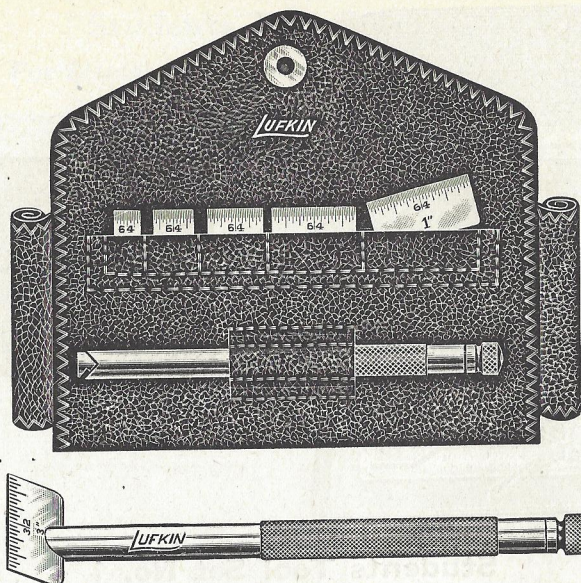
Very valuable features of our Hold Downs are these: They not only clamp the work most securely but constantly force it downward against parallel or machine bed because both contact edges are properly tapered and there is a clearance step along entire length of front of the under side.

Our Hold Downs are of steel, hardened and ground. While made in five lengths, 2, 3, 4, 5 and 6 inches, all are of same size (width and thickness), so any of the lengths can be used together on long work.

Number		Length	Width, Inches	Price per Pair
902A	Hold Downs	2-inch	$25\frac{1}{32}$	\$1.25
902B	Hold Downs	3-inch	$25\frac{1}{32}$	1.40
902C	Hold Downs	4-inch	$25\frac{1}{32}$	1.50
902D	Hold Downs	5-inch	$25\frac{1}{32}$	2.00
902E	Hold Downs	6-inch	$25\frac{1}{32}$	2.75

Packing: One pair in a box.

Weight per pair: 4 to 8 ounces.



Set of Tempered Steel Rules with Holder

These Rules and their Holder are especially suitable for measuring in small places where an ordinary rule would not enter. They are useful in general tool and die work and also wherever measuring is to be done in grooves, on narrow shoulders, in recesses, keyways, etc.

All Rules in this Set are thin, are made of tempered steel, machine divided, carefully ground and well finished. All are regularly furnished graduated one side 32nds, other side 64ths inch. (The $\frac{1}{2}$ and 1-inch rules can be furnished graduated 50ths and 100ths inch.)

Our Rule Holder is especially well suited to its work. It is four inches long, so gives good reach, and it will clamp thicknesses up to $\frac{1}{8}$ inch. At one end it has two slots for holding the rule, one at 30, the other at 45 degrees, and slight turn of knurled nut at other end rigidly clamps the rule. This will hold the rule at either 30 or 45 degrees and at right angles to the holder or when sharply cocked to either side.

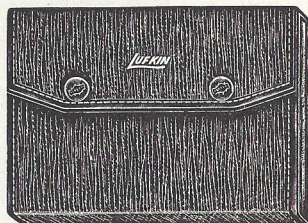
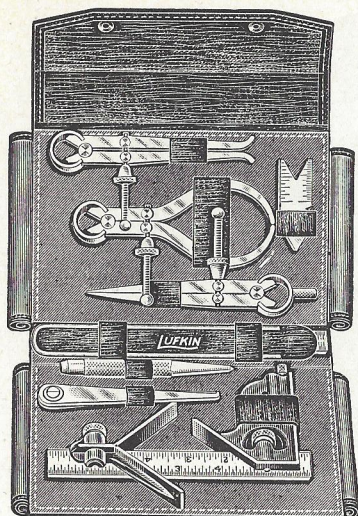
Leatherette case, $2 \times 4\frac{1}{2} \times 1\frac{1}{4}$ inch, which contains Set No. 20S, is ideal for preventing these very small rules from being lost or misplaced and for protecting the rules and the holder.

Number

Price Each

20S	Set of Rules with Holder. In Leatherette Case. Includes rules of lengths: $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1-inch.....	\$3.00
2010	Rules Only. Lengths: $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1-inch. <u>Always specify length as well as "No. 2010," as this stock number</u> applies to each rule in the above Set. Price per Rule.....	.35
20	Holder Only, for above Rules .....	.75

Packing: One set in a box
Weight: Set No. 20S, 2 ozs.



Students Tool Set No. 1

For Students, Apprentices and Mechanics

This Set contains only those tools that are indispensable at the outset to the student or beginner, and all put up in a compact folding case convenient to carry to and from classes or shop.

Every tool in this Set is a standard one, identically same as those listed in this Catalog and sold to fine mechanics for their regular work. Thus these Precision Tools may well become a part of the more complete kit or chest of tools which the mechanic will require in his work to follow.

These tools are nicely arranged and held in the Leatherette Case, which folds to size $7\frac{1}{4} \times 5\frac{1}{4} \times 1$ -inch. Set complete with Case weighs $1\frac{1}{4}$ pounds.

Contents of Students Tool Set No. 1

One Each of the Following:

Stock Number		Described on Page
25C	6-inch Combination Square. (Blade with square and center heads).....	43
2110	6-inch Flexible Steel Rule.....	93
40	4-inch "Banner" Spring Divider.....	62
41	4-inch "Banner" Outside Spring Caliper.....	63
42	4-inch "Banner" Inside Spring Caliper.....	63
17	4-inch Firm Joint Hermaphrodite Caliper.....	66
71C	Center Punch.....	86
036	Center Gage.....	56

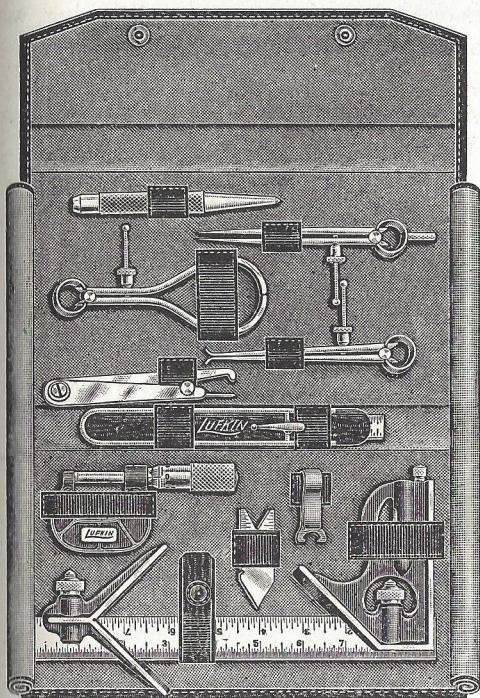
No. 1 Students Tool Set, with Case..... Price, per Set **\$8.75**

Packing: One set in a box

NOTE: More Complete Tool Set for Students—See page 89.

Students Tool Set No. 2

For Students, Apprentices and Mechanics



Where a more complete set of tools is desired by the student or apprentice, this one is recommended. It differs from our Set No. 1 in these ways:

A Micrometer is included.
The Combination Square is larger.
Other tools are of different pattern.

This Set also is put up in compact folding case, convenient to carry to and from classes or shop.

In this Set also, each tool is a standard one, identical with those sold to fine mechanics for their regular work. Therefore these Precision Tools commonly are the nucleus of the complete set required in later work.

The Leatherette Case, in which these tools are nicely arranged and held, folds to 10 $\frac{1}{4}$ x6x1-inch. Set complete with Case weighs 2 pounds.

Contents of Students Tool Set No. 2

One Each of the Following:

Stock Number		Described on Page
1911	1-inch Micrometer. With enameled frame.....	23
25C	9-inch Combination Square. (Blade with square and center heads).....	43
2110R	6-inch Flexible Steel Rule.....	93
140	4-inch Toolmakers Spring Divider.....	60
141	4-inch Toolmakers Outside Spring Caliper.....	61
142	4-inch Toolmakers Inside Spring Caliper.....	61
A-17	4-inch Firm Joint Hermaphrodite Caliper.....	66
71D	Center Punch.....	86
36	Center Gage.....	56

No. 2 Students Tool Set, with Case Price, per Set \$19.50

Packing: One set in a box

Graduations of Steel Rules

English (inch) Measure

In connection with Steel Rules or Scales, shown on pages following, we detail below those combinations of markings which are known by Graduation Numbers.

We catalog also, on the following pages, Rules in various other English graduations, also Rules marked Metric only and Metric-English.

No. 1 Graduation

One Edge: 10-20-50-100ths.
One Edge: 12-24-48ths.
One Edge: 16-32-64ths.
One Edge: 14-28ths.

No. 2 Graduation

One Edge: 10-20-50-100ths.
One Edge: 12-24-48ths.
One Edge: 16-32-64ths.
One Edge: 8ths.

No. 3 Graduation

One Edge: 32nds.
One Edge: 64ths.
One Edge: 10ths.
One Edge: 50ths.

No. 4 Graduation

One Edge: 64ths.
One Edge: 32nds.
One Edge: 16ths.
One Edge: 8ths.

No. 5 Graduation

One Edge: 32nds.
One Edge: 64ths.
One Edge: 10ths.
One Edge: 100ths.

No. 7 Graduation

One Edge: 64ths.
One Edge: 32nds.
One Edge: 16ths.
One Edge: 100ths.

No. 10 Graduation

One Edge: 32nds.
One Edge: 64ths.

No. 11 Graduation

One Edge: 64ths.
One Edge: 100ths.

No. 12 Graduation

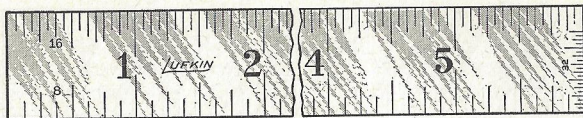
One Edge: 50ths.
One Edge: 100ths.

No. 16 Graduation

One Edge: 32nds.
One Edge: 64ths.
One Edge: 50ths.
One Edge: 100ths.



Showing "Readable" Graduations



Showing End Graduations

Spring Tempered Steel Rules

Machine Divided.

Approximate Thickness $\frac{3}{64}$ ths Inch.

Rules of this weight are extensively used. All Rules listed below are carefully ground and graduated and have clear, dark lines and figures, easy to read. All are graduated both edges of both sides. Prices of all appear at the foot of the page.

WITH "READABLE" GRADUATIONS

Number

2204R No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

Lengths: 1 to 48 inches.

"Readable" Graduations on all lengths: 64ths numbered every 8th division,
32nds numbered every 4th division.
End Graduations on 2 to 24 inch lengths: One end of both sides graduated
to 32nds.

2207R No. 7 Graduation: 16ths, 32nds, 64ths, 100ths inch.

Lengths: 1 to 48 inches.

"Readable" Graduations on all lengths: 64ths numbered every 8th division,
32nds numbered every 4th division,
100ths numbered every 10th division.

WITHOUT "READABLE" GRADUATIONS

Number

2204 No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

Lengths: 1 to 48 inches.

End Graduations on 2 to 24 inch lengths: One end of both sides graduated
to 32nds.

2201 No. 1 Graduation: 10ths, 20ths, 50ths, 100ths; 12ths, 24ths, 48ths;
16ths, 32nds, 64ths; 14ths, 28ths inch.

Lengths: 6 and 12 inch only. For gear cutting work.

2202 No. 2 Graduation: 10ths, 20ths, 50ths, 100ths; 12ths, 24ths, 48ths;
8ths; 16ths, 32nds, 64ths inch.

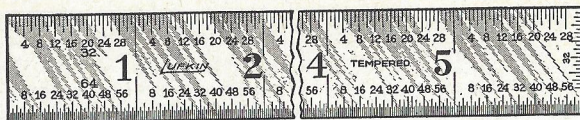
Lengths: 6 and 12 inch only.

Length, inches	1	2	3	4	6	9	12	18	24	36	48
Price, each . . .	\$.30	\$.45	\$.60	\$.75	\$.90	\$ 1.35	\$ 1.65	\$ 2.60	\$ 3.25	\$ 7.00	\$ 10.00
Approx. width											
inches	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$
Wt. doz. lbs. . . .	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	2	$4\frac{1}{2}$	6	9	12

Packing: 12 inches and under, six in a box; others, one in a package

NOTES: Extra Heavy Rule in No. 4 Graduation—See No. 2404, page 96.

Stainless Steel Rule, No. 2204R Pattern—See No. S-2204R, page 94.



Showing "Readable" Graduations



Showing End Graduations

Semi-Flexible Steel Rules

Machine Divided. "Readable" Graduations.

Approximate Thickness $\frac{1}{50}$ th Inch

These also are spring tempered Rules, but semi-flexible. They are of same widths as our stiff (No. 2204R) Steel Rules, but of weight between those and our full flexible line. Markings and figures are dark and clear, easy to read, and these Rules are carefully ground and graduated. They are marked both edges of both sides.

Number

2604R No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

Lengths: 2 to 12 inches.

"Readable" Graduations on all lengths: 64ths numbered every 8th division,
32nds numbered every 4th division.

End Graduations on all lengths: One end of both sides graduated to 32nds.

2607R No. 7 Graduation: 16ths, 32nds, 64ths, 100ths inch.

Lengths: 2 to 12 inches.

"Readable" Graduations on all lengths: 64ths numbered every 8th division,
32nds numbered every 4th division,
100ths numbered every 10th division.

Length, inches	2	3	4	6	9	12
Price, each	\$0.45	\$0.60	\$0.75	\$0.90	\$1.35	\$1.65
Approx. width, inches	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Weight doz., lbs.	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1



Narrow Steel Rules

Machine Divided.

Approximate Width $\frac{3}{16}$ ths Inch, Thickness $\frac{3}{64}$ ths Inch

Spring tempered stiff Rules, but $\frac{3}{16}$ inch wide, hence easily inserted in small openings. These Rules are carefully ground and graduated and have clear, dark lines and figures. They are marked on one edge of each side. They are interchangeable with the blades of Depth Gages Nos. 509, 510 and 511, shown pages 38 to 40.

Number

2310 Narrow Steel Rule. No. 10 Graduation: 32nds and 64ths inch.

2311 Narrow Steel Rule. No. 11 Graduation: 64ths and 100ths inch.

Length, inches	4	6	9	12
Price, each	\$0.75	\$0.90	\$1.35	\$1.65
Wt. doz., lbs.	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{5}{8}$

Packing: Six in a box



Full Flexible Steel Rules

Machine Divided.

Approximate Thickness $\frac{1}{64}$ th Inch.

Thin and very flexible, spring tempered Steel Rules. Carefully ground, and are graduated one side only, the lines and figures being dark and clear, easy to read. The Rules 12 inches and under in length are approximately $\frac{1}{2}$ inch wide, the others $\frac{3}{4}$ inch.

Number

2110 No. 10 Graduation: 32nds and 64ths inch. Lengths: 1 to 48 inches.

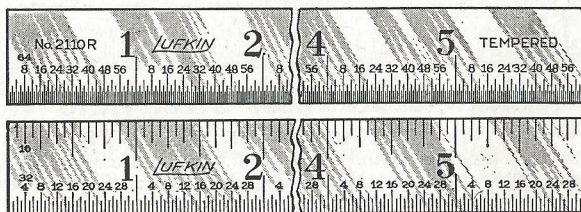
2111R No. 11 Graduation: 64ths and 100ths inch. Lengths: 6 and 12 inch only.

"Readable" Graduations: 64ths numbered every 8th division, 100ths every 10th division.

2112 No. 12 Graduation: 50ths and 100ths inch. Lengths: 6 and 12 inch only.

Length, inches	1	2	3	4	6	9	12	18	24	36	48
Price, each...	\$0.30	\$0.45	\$0.60	\$0.75	\$0.90	\$1.35	\$1.65	\$2.60	\$3.25	\$7.00	\$10.00
Wt. doz., lbs...	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{4}$	3	$4\frac{1}{2}$

Packing: 12 inches and under, six in a box; others, one in a package



Full Flexible Steel Rule

Machine Divided. "Readable" Graduations. Approx. Thickness $\frac{1}{64}$ th Inch

Thin, very flexible, spring tempered, marked both sides. "Readable" Graduations, (64ths numbered every 8th division and 32nds every 4th). Carefully ground and graduated and has clear, dark lines and figures, easy to read. The graduations most used appear on lower edge, 64ths one side, 32nds other side. 16ths upper edge of 32nds side.

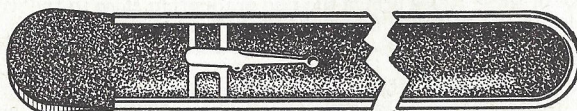
This Rule is approximately $\frac{1}{2}$ inch wide and made in 6-inch length only.

Number

2110R 6-inch. Graduation: 16ths, 32nds, 64ths inch..... **Price, Each \$0.90**

Packing: Six in a box. Wt. per doz.: $\frac{1}{4}$ lb.

NOTE: Stainless Steel Rule, No. 2110R Pattern—See No. S-2110R, page 94.



Rule Cases with Pocket Clip

Genuine Leather Rule Cases, with metal-bound edges, and having pocket clip or spring clasp. Made only for Rules 6 inches long.

Always Specify $\frac{1}{2}$ or $\frac{3}{4}$ Inch

Case With Clip. (For rules not over $\frac{1}{2}$ inch wide.).....	Price, each	\$0.15
Case With Clip. (For rules not over $\frac{3}{4}$ inch wide.).....	Price, each	.15



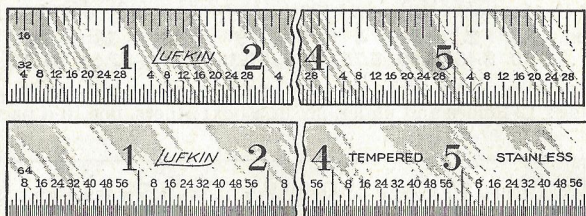
Stainless Steel Rules

Machine Divided. "Readable" Graduations. Approx. Thickness $\frac{3}{64}$ ths Inch

Genuine Stainless Steel, rust and stain proof. Otherwise same as No. 2204-R, i.e., spring tempered, carefully ground, clearly graduated on both edges of both sides. "Readable" Graduations (64ths numbered every 8th division, 32nds every 4th division).

Made only in 6 and 12-inch. Width: 6-inch, $\frac{3}{4}$ inch; 12-inch, 1 inch.

Number	Graduation No. 4	Price, Each
S-2204R 6-inch Stainless Rule. 8ths, 16ths, 32nds, 64ths inch.....		\$1.35
S-2204R 12-inch Stainless Rule. 8ths, 16ths, 32nds, 64ths inch.....		2.65



Flexible Stainless Steel Rule

Machine Divided. "Readable" Graduations. Approx. Thickness $\frac{1}{64}$ th Inch

Genuine Stainless Steel, rust and stain proof. Otherwise practically same as No. 2110-R. Thin, spring tempered, clearly marked both sides. "Readable" Graduations (64ths numbered every 8th division, 32nds numbered every 4th division). Carries 64ths lower edge one side, other side 32nds on lower and 16ths on upper edge. Thus the two graduations most used fall on lower edge.

This Rule is approximately $\frac{1}{2}$ inch wide and made in 6-inch length only

Number	Graduation	Price, Each
S-2110R 6-inch Flexible Stainless Rule. 16ths, 32nds, 64ths inch.....		\$1.35



Beveled Steel Rules, Spring Tempered

Machine Divided. One Edge Beveled. Approximate Thickness $\frac{3}{64}$ ths Inch

Beveled edge of these Rules brings the fine graduation close to the work. They are carefully ground and graduated, lines and figures being dark and easy to read. Approximate width of the 6-inch is $\frac{3}{4}$ inch, of the 12-inch, 1 inch.

Number	Graduation	Price, Each
2224 No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch. (64ths on the bevel.)		
Lengths: 6 and 12-inch only. End Graduations, 32nds one end both sides.		
2227 No. 7 Graduation: 16ths, 32nds, 64ths, 100ths inch. (100ths on the bevel.)		
Lengths: 6 and 12-inch only.		

Length, inches	6	12
Price, each.....	\$0.90	\$1.65

Packing: Six in a box



Full Flexible Steel Rules

Decimal Graduations,

Especially Suitable for the Aircraft Industry

Machine Divided. "Readable" Graduations. Approx. Thickness $\frac{1}{64}$ th Inch.

Carrying decimals (10ths and 100ths of an inch), these Rules eliminate converting to other fractions, hence are popular in industries such as aircraft, where decimals are extensively used. On opposite side they bear 32nds and 64ths inch. Marked both edges of both sides and all four graduations "Readable" (10ths numbered every division, 100ths every 10th division, 32nds every 4th and 64ths every 8th division).

These are very flexible, spring tempered Rules, carefully ground and graduated, with clear, dark lines and figures. The 6 and 12-inch are approximately $\frac{1}{2}$ inch wide; the 18 and 24-inch are $\frac{3}{4}$ inch, and slightly heavier.

All Have No. 5 Graduation: 32nds, 64ths, 10ths, 100ths inch

No. 2105R	Length, Inches	6	12	18	24
	Price, each	\$0.90	\$1.65	\$2.60	\$3.25



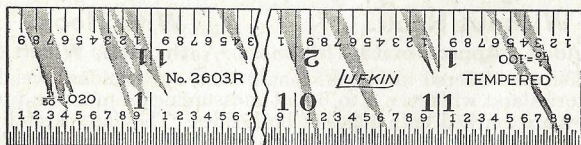
Full Flexible Steel Rule

Machine Divided. "Readable" Graduations. Approx. Thickness $\frac{1}{64}$ th Inch.

Facilitates measurement where dimensions are in decimals, eliminating necessity of converting decimals into fractions. A flexible, spring tempered Rule, carefully ground and graduated, with clear, dark lines and figures, easy to read. Marked both edges of both sides, with "Readable" Graduations throughout (64ths numbered every 8th division, 32nds every 4th division, 10ths every division, and 50ths every 5th division).

This Rule is approximately $\frac{1}{2}$ inch wide, and is made in 6-inch length only.

No. 2103R 6-inch. No. 3 Graduation: 32nds, 64ths, 10ths, 50ths inch. Each \$0.90



Semi-Flexible Steel Rule

Machine Divided. "Readable" Graduations. Approx. Thickness $\frac{1}{50}$ th Inch.

Facilitates measurement where dimensions are in decimals, eliminating necessity of converting decimals into fractions. This is a spring tempered, semi-flexible Steel Rule carrying same graduations as the one above. It also has graduations "Readable" on all four edges. It is carefully ground and graduated, lines and figures are dark, clear and easy to read.

This Rule is approximately 1 inch wide, and is made in 12-inch length only.

No. 2603R 12-inch. No. 3 Graduation: 32nds, 64ths, 10ths, 50ths inch. Each \$1.65

Packing: Six in a box.



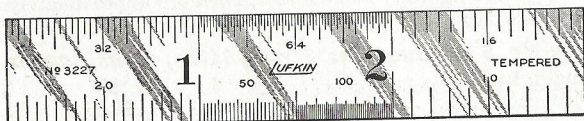
“Allen” Improved Semi-Flexible Steel Rule

Easiest to Read. Machine Divided. Approximate Thickness $\frac{1}{50}$ th Inch.

This Rule is unique in its marking and numbering. It will measure to 64ths inch, yet the closest graduations upon it are $\frac{1}{32}$ inch apart, and all odd 64ths are lines $\frac{1}{8}$ inch apart, and every one of these being numbered, it is the easiest of all Rules to read to 64ths.

One side is marked in the standard way, one edge 16ths, other edge 32nds inch, this taking care of all the even 64ths. Opposite side bears the odd 64ths only. Its one edge carries odd 64ths every fourth 64th commencing with 1, numbered 1, 5, 9, 13, etc., in each inch. Other edge bears the remaining odd 64ths, these being 3, 7, 11, 15, etc., and so numbered. Made in 6-inch length only.

No. 2608 6-inch “Allen” Steel Rule. Width: $\frac{3}{4}$ inch. Price, each \$0.90

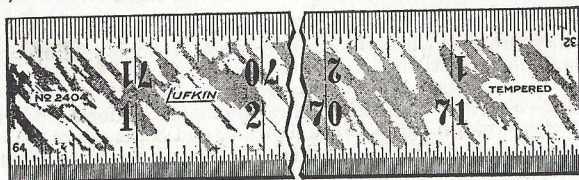


Spring Tempered Steel Rules

English-Metric. Machine Divided. Approximate Thickness $\frac{3}{64}$ ths Inch.

No. 3227 Marked: One side 16ths, 64ths; 10ths, 20ths, 50ths, 100ths inch. Other side, one edge millimeters; other edge $\frac{1}{2}$ millimeters.

Length, inches	4	6	9	12
Price, each	\$0.75	\$0.90	\$1.35	\$1.65
Approx. width, inches	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1



Heavy Spring Tempered Steel Rules

Without Hook.

With Hook.

Machine Divided. Approximate Thickness $\frac{1}{10}$ th Inch, Width $1\frac{1}{2}$ Inches.

Wider, stiffer, and offered in lengths longer than our standard weight steel rules. Popular in factories and wherever 3 to 6-foot measurements must be precisely taken.

These Rules are marked both edges of both sides. They are carefully ground and graduated, and have clear, dark lines and prominent figures, easy to read.

Hook of H-2404 Rules is of hardened steel, and is of same pattern as illustration H-2204R appearing next page. It is quickly removed by giving eccentric stud a half turn, and the rule is then, for use, same as those without hook. Removed, the hook can be set to extend from the other edge of the rule.

All Have No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

WITHOUT HOOK				WITH REMOVABLE HOOK			
No. 2404	36-inch.	Price, each	\$ 7.00	No. H-2404	36-inch.	Price, each	\$8.00
No. 2404	48-inch.	Price, each	10.00	No. H-2404	48-inch.	Price, each	11.00
No. 2404	60-inch.	Price, each	20.00	No. H-2404	60-inch.	Price, each	21.00
No. 2404	72-inch.	Price, each	24.00	No. H-2404	72-inch.	Price, each	25.00

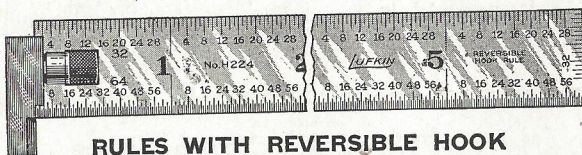
Weight each: 36-inch $1\frac{1}{4}$ lbs.; 48-inch $2\frac{1}{4}$ lbs.; 60-inch $2\frac{3}{4}$ lbs.; 72-inch $3\frac{1}{4}$ lbs.

Hook Rules

Machine Divided.

Spring Tempered Steel.

Steel Rules similar to those listed on other pages, but with Hook. Hooks are of hardened steel, sturdy and set securely. All Rules on this page are carefully ground and machine divided, having clear, dark markings, easy to read. On those under 18 inches long the zero of all graduations is at same end, so all measurements begin at inside of hook. "Readable" Graduation means 64ths numbered every 8th division, 32nds every 4th division. "End Graduation" means one end of both sides graduated to 32nds.



RULES WITH REVERSIBLE HOOK

Approximate thickness $\frac{3}{64}$ ths inch

This Hook, without removing any parts, can be changed to any of the four graduations and read from zero. This is done very readily by hand, no tool necessary. Simply loosen thumb screw until slot in hook clears the Rule, turn hook and tighten thumb screw.

No. H-224 No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

With "Readable" and End Graduations.

Length, inches	6	9	12
Price, each	\$1.50	\$2.00	\$2.40
Approx. width rule, inches	$\frac{3}{4}$	$\frac{7}{8}$	1



RULES WITH REMOVABLE HOOK

Hooks of these Rules are quickly removed by giving eccentric stud a half turn. The Rules are then, for use, same as those without hook. Removed, these Hooks can be reversed, i.e., on all lengths under 18 inches, will measure from zero on all graduations. The Narrow Pattern Rules are interchangeable with blade of our Depth Gage H-511, page 39.

STANDARD PATTERN RULES WITH REMOVABLE HOOK

Approximate thickness $\frac{3}{64}$ ths inch

No. H-2204R No. 4 Graduation: 8ths, 16ths, 32nds, 64ths inch.

"Readable" Graduations on all lengths. End Graduations on 6 to 24-inch lengths.

Length, inches	6	9	12	18	24	36
Price, each	\$1.25	\$1.75	\$2.15	\$3.10	\$3.75	\$7.65
Approx. width, inches	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$

NARROW PATTERN RULES WITH REMOVABLE HOOK

Approximate width $\frac{3}{16}$ ths inch, thickness $\frac{3}{64}$ ths inch

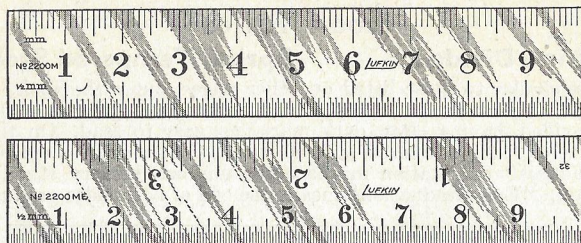
No. H-2310 No. 10 Graduation: 32nds and 64ths inch.

Length, inches	4	6	9	12
Price, each	\$1.00	\$1.20	\$1.65	\$2.00

Packing: 12 inches and under, three in a box; others, one in a package

NOTES: Heavy Steel Rules with Hook—See No. H-2404, page 96.

Hook Rules Marked Metric and English—Furnished at same prices as rules of corresponding lengths marked English only. Specify as: H-2200M, H-2300M, and H-2200ME, H-2300ME.



Metric and Metric-English Steel Rules

Machine Divided.

Spring Tempered.

All Rules listed on this page are of high quality, carefully ground and graduated, and having clear, dark lines and figures, easy to read.

Stiff Spring Tempered Rules

Approximate thickness 1 millimeter ($\frac{3}{64}$ ths inch)

No. 2200M Marked Both Sides: Three edges in mm., one edge in $\frac{1}{2}$ mm.
 No. 2200ME Marked Both Sides: One side mm., and 64ths inch;
 One side $\frac{1}{2}$ mm., and 32nds inch.

Length	5 cm.	10 cm.	15 cm.	20 cm.	30 cm.	50 cm.	1 meter
Price, each	\$0.55	\$0.75	\$0.90	\$1.20	\$1.65	\$2.60	\$10.00
Approx. width in mm.	12	12	18	21	24	32	32
Wt. per doz., lbs.	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	2	5	10

Full Flexible Spring Tempered Rules

Approximate thickness $\frac{4}{10}$ ths mm. ($\frac{1}{64}$ th inch)

No. 2100M Marked One Side Only: Upper edge mm., lower edge $\frac{1}{2}$ mm.
 No. 2100ME Marked One Side Only: Upper edge $\frac{1}{2}$ mm., lower edge 64ths inch.

Length	5 cm.	10 cm.	15 cm.	20 cm.	30 cm.	50 cm.
Price, each	\$0.55	\$0.75	\$0.90	\$1.20	\$1.65	\$2.60
Approx. width in mm.	12	12	12	12	12	18
Wt. per doz., lbs.	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	2

Narrow Pattern Spring Tempered Rules

Approximate width 5 mm. ($\frac{3}{16}$ ths inch); Thickness 1 mm. ($\frac{3}{64}$ ths inch)

No. 2300M Marked Both Sides: One edge, one side mm., other side $\frac{1}{2}$ mm.
 No. 2300ME Marked Both Sides: One edge, one side $\frac{1}{2}$ mm., other side 64ths inch.

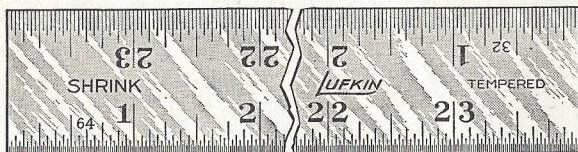
Length	10 cm.	15 cm.	20 cm.	30 cm.
Price, each	\$0.75	\$0.90	\$1.20	\$1.65
Wt. per doz., lbs.	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{5}{8}$

Packing: Rules 30 cm. and under.....Six in a box
 All other lengths.....One in a package

NOTE: English-Metric 4 to 12-Inch Rules—See No. 3227, page 96.

Steel Shrink Rules

This page is confined to Spring Tempered Steel Shrink Rules. Graduations throughout these Rules allow for the shrinkage indicated. These Rules are extensively used by patternmakers, foundry workers and others. All are high grade, accurate, machine divided Rules, suitable alike for common and for close work. They are carefully ground and graduated, have clear, dark lines and figures, easy to read, and are most durable.



STEEL SHRINK RULES

Machine Divided. Approximate Thickness $\frac{3}{64}$ ths Inch.
No. 4 Graduation: 8ths, 16ths, 32nds, 64ths Shrinkage Inch

Always Specify Length as Well as Stock Number

No.	Shrink Per Ft.	No.	Shrink Per Ft.	No.	Shrink Per Ft.
83A.....	$\frac{1}{16}$ inch	83F.....	$\frac{3}{16}$ inch	83P.....	$\frac{9}{64}$ inch
83B.....	$\frac{1}{12}$ inch	83G.....	$\frac{1}{4}$ inch	83R.....	$\frac{5}{32}$ inch
83C.....	$\frac{1}{10}$ inch	83H.....	$\frac{5}{16}$ inch	83S.....	$\frac{7}{32}$ inch
83D.....	$\frac{3}{32}$ inch	83J.....	$\frac{7}{16}$ inch	83T.....	$\frac{9}{32}$ inch
83E.....	$\frac{1}{8}$ inch	83K.....	$\frac{3}{8}$ inch	83W.....	$\frac{11}{32}$ inch
		83L.....	$\frac{1}{2}$ inch	83Y.....	$\frac{13}{32}$ inch

Length	6-inch	12-inch	24-inch
Price, each.....	\$1.00	\$2.10	\$4.25
Approx. width, inches.....	$\frac{3}{4}$	1	$1\frac{1}{4}$
Weight, each.....	1 oz.	$2\frac{1}{2}$ ozs.	6 ozs.

Packing: 6 and 12-inch Rules, six in a box; 24-inch, one in a package



FLEXIBLE STEEL SHRINK RULES

Machine Divided. Approximate Thickness $\frac{1}{64}$ th Inch.
No. 10 Graduation: 32nds and 64ths Shrinkage Inch

(Graduated one side only, lower edge 64ths, upper edge 32nds.)

No.	Shrink Per Ft.	Length	Wt., Each	Width	Price, Each
2183E	$\frac{1}{8}$ inch	6-inch only	1 oz.	$\frac{1}{2}$ inch	\$1.00
2183F	$\frac{3}{16}$ inch	6-inch only	1 oz.	$\frac{1}{2}$ inch	1.00

NOTES: Metric Shrink Rules:

No. 83M	30 cm.	Shrinkage of 1 mm to 100 mm.....	Each	\$2.10
No. 83MM	30 cm.	Shrinkage of 1 mm to 50 mm.....	Each	2.10

Shrink Blades for Combination Squares—See page 48.

Average Shrinkage of Castings

Metal	Shrinkage Per Foot	Metal	Shrinkage Per Foot
Cast Iron.....	$\frac{1}{8}$ inch	Aluminum.....	$\frac{3}{16}$ inch
Malleable Iron.....	$\frac{3}{8}$ inch	Copper.....	$\frac{3}{16}$ inch
Steel.....	$\frac{1}{4}$ inch	Lead.....	$\frac{5}{16}$ inch
Brass.....	$\frac{3}{16}$ inch	Zinc.....	$\frac{5}{16}$ inch



Figure 1

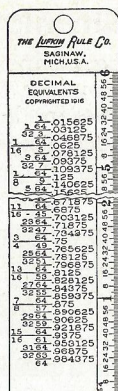


Figure 2

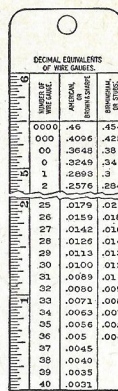


Figure 3

Mechanics Steel Reference Tables

These Tables are especially handy for machinists, toolmakers and diemakers, as they carry valuable information required in daily work. They are convenient also for anyone having occasion to refer to wire gages, decimal equivalents of common fractions, or tap and drill sizes.

Made of flexible spring steel, 1 1/4 inches wide, 6 3/4 inches long, and having hole at upper end. Machine divided, with clear dark figures and lines, easy to read. In addition to tables, both Nos. 97 1/2 and 98 carry on each side a 6-inch graduated scale.

No. 97 1/2 Reference Table. Marked Both Sides as Figures 1 and 2. (Carries tap and drill sizes and decimal equivalents of fractions, and 6-inch scales, as detailed below).....Price, each \$0.90

No. 98 Reference Table. Marked Both Sides as Figures 2 and 3. (Carries decimal equivalents of wire gages and fractions, and 6-inch scales, as detailed below).....Price, each \$0.90

Figure 1. Tables of U. S., A. S. M. E., S. A. E., and Briggs Pipe Standard machine screw tap and drill sizes, including fractional and numbered sizes. Also a 6-inch scale to 32nds, "Readable" Graduations.

Figure 2. Table of decimal equivalents of fractions in 64ths from 1/64th to 63/64ths. Also a 6-inch scale to 64ths, "Readable" Graduations.

Figure 3. Table of Decimal equivalents of wire gages. Also a 6-inch scale to 32nds, "Readable" Graduations.

Weight per doz.: 12 ozs. Packing: Six in a box

NOTE: Leather Cases for Nos. 97 1/2 and 98—Furnished at small extra charge.



The Decimeter Rule

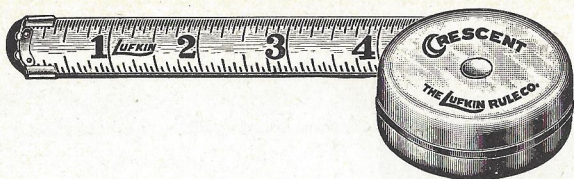
A Key to the Metric System

1 Decimeter Long. 1 Centimeter Wide. 1 Millimeter Thick.

This Rule gives a most comprehensive visual demonstration of metric sizes. It is of tempered steel, machine divided. It is marked one edge, one side, in centimeters and millimeters. It carries on both sides interesting facts regarding the metric system.

Furnished with Metal-Bound Leather Case

No. 99 Decimeter Rule. Length: 10 centimeters (1 decimeter)....Price, each \$0.50



CRESCENT and "All-Stainless" CRESCENT Tape-Rules (PATENTED)

Automatic Wind. $\frac{5}{8}$ Inch Wide Blade.

Six-foot Tape-Rules, sturdy and suitable for steady use. Blades are stiffened by concave forming so they can be projected unsupported like a rule, yet they will also flex to accurately measure circles, etc. Markings are prominent and dark, easy to read.

Metal cases are of good construction, well finished, fully enclose blade, and are but two inches in diameter. Cases have rounded corners and edges are ribbed at bottom so case will stand on edge, enabling blade to lie flat on the work.

Blade is manually withdrawn and automatically returned by pressing push button, smooth-working, always under control and will stand at any length withdrawn. Sliding end hook automatically adjusts itself to take either butt end or hook measurements and when pushed back serves also as a gage, indicating and holding the measurement.

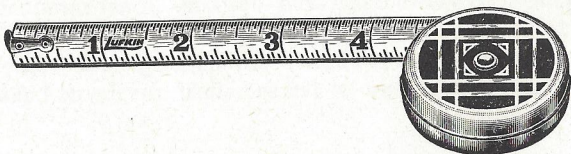
No. 696 has Steel Blade nickel plated and case nickel plated.

No. S-696 has both Blade and Case of Stainless Steel, rust-proof.

Both Marked Inches to 16ths, Both Edges

(First 6 inches upper edge to 32nds)

No. 696 "Crescent" Tape-Rule. Length: 72 inches Price, each \$2.50
No. S-696 "All Stainless" Crescent. Length: 72 inches Price, each 3.00



"Aristocrat" Tape-Rule

Manually Operated. $\frac{7}{16}$ Inch Wide Blade.

Compact and most attractive, yet a very practical 6-foot pocket measure. Has the flexible and rigid features, both so handy in measuring, yet weighs only two ounces and diameter of case is but $1\frac{5}{8}$ inches.

Steel blade is nickel plated, has clear dark markings, easy to read, and solid end hook. Blade is manually withdrawn and returned to case, operates smoothly, and will remain set at any length withdrawn.

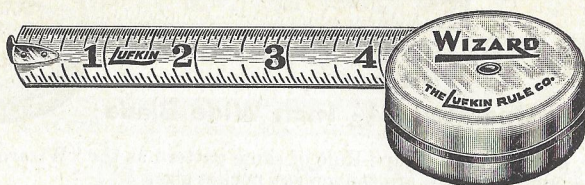
Neat case of stainless steel. This case has on both sides an embossed design with background in black enamel, giving the "Aristocrat" the appearance its name implies. Packed in handsome, black and silver, individual box, transparent covered, and sealed.

Marked Inches to 16ths, Both Edges

(First 6 inches upper edge to 32nds)

No. 186 "Aristocrat" Tape-Rule. Length: 72 inches Price, each \$1.50

NOTES: "Crescent" and "Aristocrat" in Other Graduations—See our General Catalog.
Tape-Rules Bearing Customer's Advertisement—See our Specialty Catalog.



WIZARD Tape-Rules

(PATENTED)

Manually Operated. $\frac{5}{8}$ Inch Wide Blade

A medium priced Tape-Rule that will give satisfactory service in steady use and has appeal to mechanics and many others.

Standard thickness steel blade stiffened by concave forming can be projected unsupported, like a rule, to walls, ceilings, or into openings. It will also flex to closely measure circles, around corners, etc. Blade is nickel plated and the prominent dark lines and figures are in sharp contrast, easy to read. Blade is manually withdrawn and returned to case. It operates smoothly, and because of superior case construction is perfectly balanced so it remains set at any length withdrawn, will not spring back into case. Solid hook at first end is very handy for measuring within or beyond arms reach. Accurate butt end measurement can be taken from the shoulders of the blade.

Sturdy metal case is nickel plated. It fully encloses the blade, thus excludes dirt. It will stand on edge so blade lies flat on work. Diameter of 6-foot case is two inches.

Markings, One Side Only

No.	Length		Price, Each
686	72 inch	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds).....	\$1.00
688	96 inch	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds).....	1.50
6810	120 inch	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds).....	2.50
686D	6 foot	Feet, 10ths and 100ths of feet upper edge. Feet, inches and 16ths on lower edge.....	1.25
686EM	78 $\frac{3}{4}$ inch (2 meters)	Millimeters on upper edge. Inches to 16ths lower edge	1.25

Weight per doz.: 6 ft., 3 lbs., 8 ft., 3 $\frac{1}{2}$ lbs., 10 ft., 4 $\frac{1}{2}$ lbs.

Packing: One in a box, six in a carton

NOTE: "Wizard Junior" Tape-Rule—See page 102.

WIZARD Junior Tape-Rules

(Patented)

Manually Operated. 1/2 Inch Wide Blade



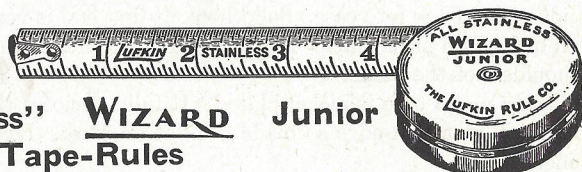
A smaller, popular priced Tape-Rule of same pattern as the "Wizard." The 6-foot weighs but 2½ ounces. Cases are convenient pocket size.

Nickel plated steel blade has dark markings, easy to read. It is stiffened by concave forming, so will project unsupported, like a rule. It will also flex to closely measure around corners, etc. Blade is manually withdrawn and returned, runs smoothly, and is well balanced, so remains set at any point. Solid hook is handy for measuring within or beyond arms reach. Accurate butt end measurement is taken from shoulder of blade.

Substantial nickel plated case fully encloses the blade, excluding dirt. Cases are 1⅞ inches in diameter, have rounded corners and are ribbed at bottom to stand on edge.

Markings, One Side Only

Number	Length		Price, Each
1686	72 inch	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds).....	\$0.85
1688	96 inch	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds).....	1.40
1686D	6 foot	Feet, 10ths and 100ths of feet upper edge. Feet, inches and 16ths on lower edge.....	1.10
1686EM	78¾ inch (2 meters)	Millimeters on upper edge. Inches to 16ths lower edge.....	1.10



"All Stainless" WIZARD Junior Tape-Rules

(Patented)

Manually Operated. 1/2 Inch Wide Blade

Rust-Proof Blade and Case

"All Stainless Wizard Jr." is built for those wishing a manually operated Tape-Rule that is rust-proof throughout. Both blade and case are of genuine stainless steel. It is suitable for general use and ideal for work in which rust and corrosion are common troubles.

End hook has short sliding action, so automatically adjusts itself to give accurate result when hooked over any object (as in ordinary measuring), and also when blade is projected against any surface (as in taking a butt end measurement).

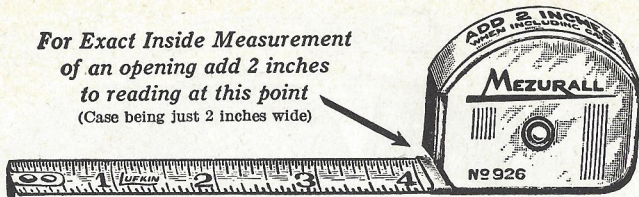
In other respects these Tape-Rules are same as the popular "Wizard Junior" described above.

Markings, One Side Only

No.	Length		Price, Each
S-1686	72 inch	Inches to 16ths, both edges. (First 6 inches upper edge to 32nds).....	\$1.50
S-1686D	6 foot	Feet, 10ths and 100ths of feet upper edge. Feet, inches and 16ths on lower edge.....	1.75

Wt. per doz.: 72-inch, 2¼ lbs.; 96-inch, 2½ lbs. Packing: One in a box, six in a carton

For Exact Inside Measurement
of an opening add 2 inches
to reading at this point
(Case being just 2 inches wide)



MEZURALL Tape-Rules

(PATENTED)

Manually Operated. 1/2 Inch Wide Blade
Most Practical and Compact All-Purpose Tape-Rule
For Inside and Outside, also Height and Depth Measuring

The "Mezurall" is a popular priced Tape-Rule, most simple and positive in operation, accurate and suitable alike for:

- Standard, i.e., common measuring.
- Inside measuring of door and window openings, etc.
- Gaging or measuring of height or depth.

End hook has short sliding action, so automatically adjusts itself to give accurate result when hooked over any object (as handy in common measuring), and when blade is projected against any surface (as in taking an inside or any other butt end measurement). The case has three flat edges, so will stand unsupported in three measuring positions, i.e., with blade projected horizontally, or upward or downward.

To take an inside measurement:

- Butt square back edge of case against one side of opening being measured.
- Extend the blade to the other limit.
- Add 2 inches to the reading clearly indicated at the square opening of the case, as illustrated (case being 2 inches wide).
- (This instruction is clearly stamped on the case itself.)

The "Mezurall" is very compact and light weight. It weighs but 3 ounces, and case is but 3/8 inch thick and its greatest width 2 inches. The case is nickel plated, has rounded corners and is well finished. It fully encloses the blade.

The blade is nickel plated and has dark and prominent markings, easy to read. It is stiffened by concave forming, so can be projected unsupported, like a rule, to walls, ceilings, across openings, etc., yet will also flex to properly measure circles and odd shapes. The blade is manually withdrawn and returned to case, runs smoothly and remains set at any length withdrawn, does not spring back into case.

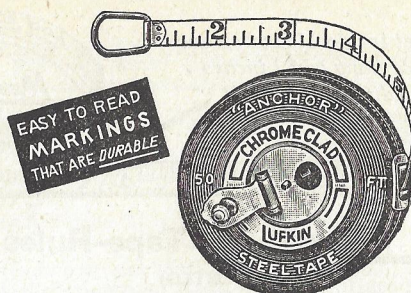
No.	Length	Markings	Price, Each
926	72 inch	Blade Marked One Side, both edges, inches to 16ths. (First 6 inches upper edge to 32nds).....	\$1.25
928	96 inch	Marked same as above.....	1.65
926B	72 inch	Blade Marked Both Sides, both edges, inches to 16ths. (First 6 inches upper edges to 32nds).....	1.50
928B	96 inch	Marked Both Sides, same as No. 926B.....	1.90

Weight per doz., 2 1/2 lbs. Packing: One in a box, six in a carton

Stainless Steel MEZURALL Tape-Rule

We offer Tape-Rule same as No. 926, described above, except having blade of Genuine Stainless Steel, Rust-Proof.

No. S-926 72 inch Stainless "Mezurall" Tape-Rule..... Price, each \$1.75



"Anchor" Chrome Clad

Steel Tapes

(Patented)

No. C213 Series. $\frac{3}{8}$ Inch Wide. Leather Case.
High Grade Line and Case
Ideal Tape for General Measuring Purposes

"Anchor" Chrome Clad is an accurate Steel Tape, chrome plated, with jet black markings and satin chrome-white surface, unusually free of glare.

OUTSTANDING FEATURES:

Markings prominent and easy to read, even in poor or artificial light.

Markings durable. (Also very important.)

Tape resists rust. (Heavily chrome plated.)

Tape is extra strong. (Built up by plating.)

Tape will not surface crack, chip or peel, and is hard, smooth, easily kept clean. (Being of metal throughout.)

Case and its mounting are durable and of outstanding beauty.

"Anchor" is the type of Steel Tape suitable for all usual measuring work, with durable case, very nice to carry. This case is of finest, genuine leather, mahogany in color, closely hand-stitched over a substantial steel liner which is rust-resistant coated. Folding flush handle is opened by push pin. Tape has "Instantaneous" Readings; zero falls at outer end of stainless steel ring.

"Anchor" Chrome Clad Tapes

Complete With Leather Case
 $\frac{3}{8}$ Inch Wide. Marked One Side Only.

	C210	C213	C215	C216
Feet, inches and 8ths.....No.	C210D	C213D	C215D	C216D
Feet, 10ths and 100ths ft.....No.	25 Ft.	50 Ft.	75 Ft.	100 Ft.
Length.....	9 ozs.	15 ozs.	21 ozs.	26 ozs.
Weight, each.....	\$6.00	\$7.30	\$9.50	\$12.50
Price, each.....				

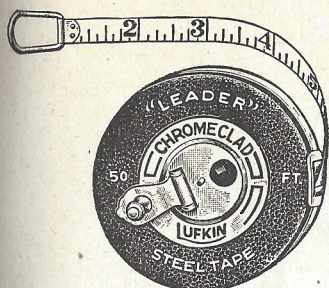
Refills (Chrome Clad Lines Only, Without Case)
 $\frac{3}{8}$ Inch Wide. Marked One Side Only.

	OC210	OC213	OC215	OC216
Feet, inches and 8ths.....No.	OC210D	OC213D	OC215D	OC216D
Feet, 10ths and 100ths ft.....No.	25 Ft.	50 Ft.	75 Ft.	100 Ft.
Length.....	\$4.20	\$5.20	\$6.90	\$9.00
Price, each.....				

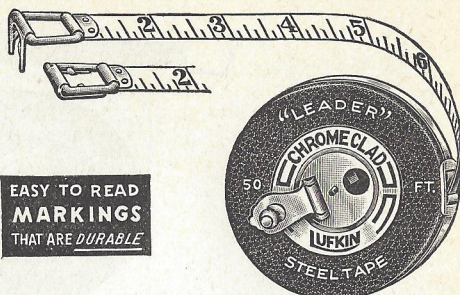


Hook-Ring, Open and Closed

Any of above Tapes can be supplied with this Hook-Ring, instead of the standard ring pictured at top of this page. If Hook-Ring is wanted, prefix "H" to stock number as **H-C213**, **H-OC213**, etc., and add to above list prices 20¢ per tape.



With Standard Ring



With Hook-Ring

EASY TO READ
MARKINGS
THAT ARE DURABLE

"Leader" Chrome Clad

Steel Tapes

(Patented)

No. C253 Series. $\frac{3}{8}$ Inch Wide.

The Popular Priced Chrome Clad Tape.

Accurate. Serviceable. Attractive.

CHROME CLAD IS A STEEL TAPE, CHROME PLATED:

Markings Easy to Read, being jet black against satin, chrome-white surface, free of glare.

Markings Very Durable, a feature of equal importance.

Line Resists Rust, being chrome plated, which also makes its surface hard, smooth, easily kept clean.

Line Is Extra Strong, being built up by platings.

"Leader" Chrome Clad is built for those who need a long Steel Tape that is accurate, easy to read and serviceable, yet moderate in price. The line is same weight and has the same superior features as our other $\frac{3}{8}$ inch wide Chrome Clad Tapes. The case is a type that has proven very satisfactory, attractive and durable. It is of black, imitation leather, over a substantial steel liner which is rust-resistant coated. It has a $\frac{3}{16}$ inch wide, flat, flush, nickel plated edge band and folding, flush handle opened by push pin. Tape has "Instantaneous" Readings. Zero falls at outer end of the standard pattern, stainless steel ring.

Hook-Ring: "Leader" with Hook-Ring enables one man to measure unassisted. This permanently attached, small, sturdy, metal hook folds flush against the ring and friction holds it either open or closed, so the tape is suitable as well for measuring without hook. This 2-pronged hook with its anchor spurs takes a square, firm hold on a board, or a building, at end of a pipe, etc. Spurs grip under tension, also release themselves. Zero falls at inside of open hook.

"Leader" Chrome Clad Tapes

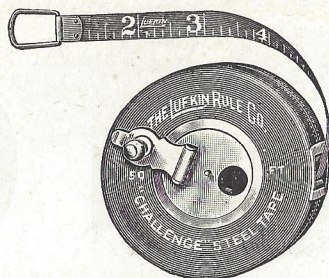
$\frac{3}{8}$ Inch Wide. Marked One Side Only.

With Standard Ring

Feet, inches and 8ths.....No.	C250	C253	C255	C256
Length.....	25 Ft.	50 Ft.	75 Ft.	100 Ft.
Weight, each.....	9 ozs.	15 ozs.	20 ozs.	25 ozs.
Price, each.....	\$3.50	\$4.25	\$5.75	\$7.25

With Hook-Ring

Feet, inches and 8ths.....No.	H-C250	H-C253	H-C255	H-C256
Length.....	25 Ft.	50 Ft.	75 Ft.	100 Ft.
Weight, each.....	9 ozs.	15 ozs.	20 ozs.	25 ozs.
Price, each.....	\$3.70	\$4.45	\$5.95	\$7.45



“Challenge” Steel Tapes

No. 260 Series. $\frac{3}{8}$ Inch Wide.

The Standard, High Grade, General Purpose Steel Tape

The “Challenge” has become the recognized standard steel tape in leather case through its many years of steady, reliable service. It is popular in all construction work, for general use about industrial plants and properties, etc.

Line of highest grade tape steel, distinctly marked, and with “Nubian” (black) Finish, and “Instantaneous” Readings (last preceding foot number repeated at each inch throughout) aids to accurate and quick reading. Case of brown, selected, genuine leather, closely hand-stitched and with substantial steel liner which is rust-resistant coated. Folding flush handle is opened by pressing pin on opposite side. Mountings nickel plated. Measurements guaranteed accurate.

Marked One Side Only, Feet, Inches and 8ths

Number.....	260	263	265	266
Length, feet.....	25	50	75	100
Weight each, ozs.....	8	11	17	21
Price, each.....	\$5.40	\$6.60	\$8.60	\$11.30

“Challenge” Tapes with Hook-Ring—See Page 105

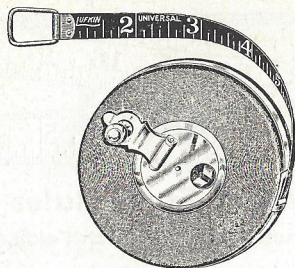
Packing: One in a box

NOTES: Feet, Inches and 16ths—“Challenge” Tapes so marked, 5% extra.

“Challenge” Tapes in Other Graduations—See our General Catalog.

Stainless Steel “Challenge” Tapes—Supplied at an extra price.

For additional information on our complete lines of
Measuring Tapes, Wood Rules, etc., see page 107



“Universal” Steel Tapes

No. 540 Series. $\frac{3}{8}$ Inch Wide.

This is our popular priced Steel Tape. It has brought steel tape accuracy within the reach of every mechanic and many others.

The line is of standard width and weight, clearly marked and having “Instantaneous” Readings and “Nubian” Finish. The metal lined case is covered with mottled, black “Keratol,” a good looking and extra durable material. It has $\frac{3}{8}$ inch wide, flat, flush, nickel plated edge band. Folding flush handle is opened by pressing pin on opposite side. Mountings nickel plated. Measurements guaranteed accurate.

Marked One Side Only, Feet, Inches and 8ths

Number	540	543	545	546
Length, feet	25	50	75	100
Weight each, ozs.	6	10	15	17
Price, each	\$3.10	\$3.50	\$4.80	\$5.90



Position of Hook When Not in Use

“Challenge” and “Universal” Steel Tapes with Hook-Ring

These are tapes with cases exactly same as described above and on preceding page but with Hook-Ring.

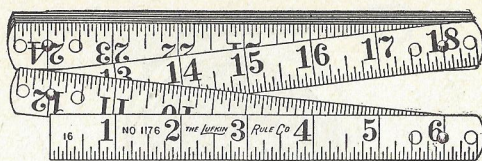
This Hook-Ring will hold tape at end of a board or bench, corner of a building, on to metal sheets, pipe, etc. It is a small, yet sturdy, folding steel hook, permanently affixed to tape-ring. It holds itself in position, both open and closed.

Zero falls at inside of open hook. Both prongs of hook have an anchor spur which grips when tape is given tension, taking a firm, square hold, and preventing losing hold by side sway; yet the tape releases itself when tension is released. When folded, hook does not interfere with use of tape in the ordinary way.

Tapes with Hook-Ring and Marked One Side Only, Feet Inches and 8ths

No.	Length	Brand	Each	No.	Length	Brand	Each
H-260	25 ft.	“Challenge”	\$ 5.60	H-540	25 ft.	“Universal”	\$3.30
H-263	50 ft.	“Challenge”	6.80	H-543	50 ft.	“Universal”	3.70
H-265	75 ft.	“Challenge”	8.80	H-545	75 ft.	“Universal”	5.00
H-266	100 ft.	“Challenge”	11.50	H-546	100 ft.	“Universal”	6.10

Further information on our complete lines of Tapes, Wood Rules, etc., see page 107



Folding Steel Rules

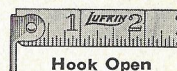
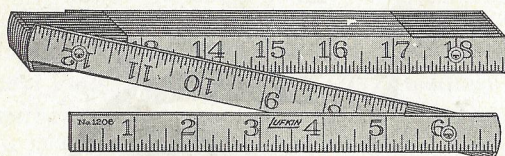
$\frac{3}{4}$ Inch Wide. Six-inch Folds.

Popular in steel mills, machine shops and wherever lighter weight metal rules and wood rules are often broken. These are tempered steel rules, $\frac{1}{8}$ inch thick. Each joint has substantial rivet headed over washers and two durable stops or snap sockets, holding sections rigidly in alignment when rule is open and when closed. Lines and figures are deeply sunken and black, in good contrast, easy to read and permanent. (On very precise work a one-piece steel scale should be used.)

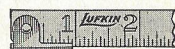
Marked Both Sides, Lower Edge, Consecutive Inches to 16ths

No. 1173	3 ft. Steel Rule.	Wt. doz. $3\frac{1}{4}$ lbs.	Price, each \$2.00
No. 1174	4 ft. Steel Rule.	Wt. doz. $4\frac{1}{2}$ lbs.	Price, each 2.60
No. 1175	5 ft. Steel Rule.	Wt. doz. $5\frac{1}{2}$ lbs.	Price, each 3.30
No. 1176	6 ft. Steel Rule.	Wt. doz. $6\frac{1}{2}$ lbs.	Price, each 3.90
No. 1178	8 ft. Steel Rule.	Wt. doz. $8\frac{1}{2}$ lbs.	Price, each 5.40

Packing: 3-ft. Rules, Twelve in a box; All others, Six in a box



Hook Open



Hook Closed

Folding Aluminum Rules

$\frac{5}{16}$ Inch Wide.

Six-inch Folds.

Aluminum Rules, being durable and holding their length well are popular in construction work and in mills, shops, etc. They have solid brass joints, hence are rust-proof throughout. Our Aluminum Rules are of a special hardness, therefore hold their shape. The sunken and black graduation marks and large figures are in good contrast, easy to read. Solid brass spring joints properly hold sections in alignment, open and closed. The joints have rivet headed over flush embedded washers, and thus securely hold rule to length.

Rule H-1206 has small and sturdy brass hook at one end, very handy for measuring beyond arms reach. Hook can readily be folded up and then holds itself flush with the edge. Zero falls at inside of open hook; at extreme end of rule when hook is closed.

Marked Both Sides, Lower Edge, Consecutive Inches to 16ths

No. 1204	4 ft. Aluminum Rule.	Wt. doz. $3\frac{1}{4}$ lbs.	Price, per doz. \$10.60
No. 1205	5 ft. Aluminum Rule.	Wt. doz. $4\frac{1}{4}$ lbs.	Price, per doz. 13.20
No. 1206	6 ft. Aluminum Rule.	Wt. doz. 5 lbs.	Price, per doz. 15.60
No. H-1206	6 ft. Aluminum Rule with Hook.	Wt. doz. 5 lbs.	Price, per doz. 16.80

Packing: $\frac{1}{4}$ doz. per box

For additional information on our complete lines of Measuring Tapes, Wood Rules, etc., see page 107



GENERAL CATALOG No. 12

Catalog No. 12 covers not only the Precision Tools shown in this Catalog No. 7, but our complete lines of Measuring Tapes, Rules, etc., including the following and related items:

- Steel Measuring Tapes
- Woven Measuring Tapes
- Steel Tape-Rules
- Boxwood Rules
- Spring Joint Wood Rules
- Folding Aluminum Rules
- Misc. Rules, Wood, Steel and Brass
- Glass Boards, Rules and Squares
- Tailors Squares, Rules and Tapes
- Lumber Rules
- Boot Calks

Catalog No. 12 we gladly send on request to the trade and to mechanics and others interested in our General Line

THE LUFKIN RULE CO.

Decimal Equivalents of 8ths, 16ths, 32nds and 64ths of an inch

8ths	$\frac{9}{32} = .28125$	$\frac{19}{64} = .296875$
$\frac{1}{8} = .125$	$\frac{11}{32} = .34375$	$\frac{21}{64} = .328125$
$\frac{1}{4} = .250$	$\frac{13}{32} = .40625$	$\frac{23}{64} = .359375$
$\frac{3}{8} = .375$	$\frac{15}{32} = .46875$	$\frac{25}{64} = .390625$
$\frac{1}{2} = .500$	$\frac{17}{32} = .53125$	$\frac{27}{64} = .421875$
$\frac{5}{8} = .625$	$\frac{19}{32} = .59375$	$\frac{29}{64} = .453125$
$\frac{3}{4} = .750$	$\frac{21}{32} = .65625$	$\frac{31}{64} = .484375$
$\frac{7}{8} = .875$	$\frac{23}{32} = .71875$	$\frac{33}{64} = .515625$
	$\frac{25}{32} = .78125$	$\frac{35}{64} = .546875$
16ths	$\frac{27}{32} = .84375$	$\frac{37}{64} = .578125$
$\frac{1}{16} = .0625$	$\frac{29}{32} = .90625$	$\frac{39}{64} = .609375$
$\frac{3}{16} = .1875$	$\frac{31}{32} = .96875$	$\frac{41}{64} = .640625$
$\frac{5}{16} = .3125$		$\frac{43}{64} = .671875$
$\frac{7}{16} = .4375$	64ths	$\frac{45}{64} = .703125$
$\frac{9}{16} = .5625$	$\frac{1}{64} = .015625$	$\frac{47}{64} = .734375$
$\frac{11}{16} = .6875$	$\frac{3}{64} = .046875$	$\frac{49}{64} = .765625$
$\frac{13}{16} = .8125$	$\frac{5}{64} = .078125$	$\frac{51}{64} = .796875$
$\frac{15}{16} = .9375$	$\frac{7}{64} = .109375$	$\frac{53}{64} = .828125$
32nds	$\frac{9}{64} = .140625$	$\frac{55}{64} = .859375$
$\frac{1}{32} = .03125$	$\frac{11}{64} = .171875$	$\frac{57}{64} = .890625$
$\frac{3}{32} = .09375$	$\frac{13}{64} = .203125$	$\frac{59}{64} = .921875$
$\frac{5}{32} = .15625$	$\frac{15}{64} = .234375$	$\frac{61}{64} = .953125$
$\frac{7}{32} = .21875$	$\frac{17}{64} = .265625$	$\frac{63}{64} = .984375$

Decimal Equivalents of Millimeters

Mm.	Inches	Mm.	Inches	Mm.	Inches	Mm.	Inches
.1	.00394	4.4	.17322	8.7	.34251	13.	.51181
.2	.00787	4.5	.17716	8.8	.34645	13.1	.51574
.3	.01181	4.6	.18110	8.9	.35039	13.2	.51968
.4	.01575	4.7	.18503	9.	.35433	13.3	.52362
.5	.01968	4.8	.18897	9.1	.35826	13.4	.52755
.6	.02362	4.9	.19291	9.2	.36220	13.5	.53149
.7	.02756	5.	.19685	9.3	.36614	13.6	.53543
.8	.03149	5.1	.20078	9.4	.37007	13.7	.53936
.9	.03543	5.2	.20472	9.5	.37401	13.8	.54330
1.	.03937	5.3	.20866	9.6	.37795	13.9	.54724
1.1	.04330	5.4	.21259	9.7	.38188	14.	.55118
1.2	.04724	5.5	.21653	9.8	.38582	14.1	.55511
1.3	.05118	5.6	.22047	9.9	.38976	14.2	.55905
1.4	.05512	5.7	.22440	10.	.39370	14.3	.56299
1.5	.05905	5.8	.22834	10.1	.39763	14.4	.56692
1.6	.06299	5.9	.23228	10.2	.40157	14.5	.57086
1.7	.06692	6.	.23622	10.3	.40551	14.6	.57480
1.8	.07086	6.1	.24015	10.4	.40944	14.7	.57873
1.9	.07480	6.2	.24409	10.5	.41338	14.8	.58267
2.	.07874	6.3	.24803	10.6	.41732	14.9	.58661
2.1	.08267	6.4	.25196	10.7	.42125	15.	.59055
2.2	.08661	6.5	.25590	10.8	.42519	15.5	.61023
2.3	.09055	6.6	.25984	10.9	.42913	16.	.62992
2.4	.09448	6.7	.26377	11.	.43307	16.5	.64960
2.5	.09842	6.8	.26771	11.1	.43700	17.	.66929
2.6	.10236	6.9	.27165	11.2	.44094	17.5	.68897
2.7	.10629	7.	.27559	11.3	.44488	18.	.70866
2.8	.11023	7.1	.27952	11.4	.44881	18.5	.72834
2.9	.11417	7.2	.28346	11.5	.45275	19.	.74803
3.	.11811	7.3	.28740	11.6	.45669	19.5	.76771
3.1	.12204	7.4	.29133	11.7	.46062	20.	.78740
3.2	.12598	7.5	.29527	11.8	.46456	20.5	.80708
3.3	.12992	7.6	.29921	11.9	.46850	21.	.82677
3.4	.13385	7.7	.30314	12.	.47244	21.5	.84645
3.5	.13779	7.8	.30708	12.1	.47637	22.	.86614
3.6	.14173	7.9	.31102	12.2	.48031	22.5	.88582
3.7	.14566	8.	.31496	12.3	.48425	23.	.90551
3.8	.14960	8.1	.31889	12.4	.48818	23.5	.92519
3.9	.15354	8.2	.32283	12.5	.49212	24.	.94488
4.	.15748	8.3	.32677	12.6	.49606	24.5	.96456
4.1	.16141	8.4	.33070	12.7	.49999	25.	.98425
4.2	.16535	8.5	.33464	12.8	.50393	25.5	1.00393
4.3	.16929	8.6	.33858	12.9	.50787	26.	1.02362

Decimal Equivalents of Number Size Drills

No.	Size of Drill in Inches	No.	Size of Drill in Inches	No.	Size of Drill in Inches	No.	Size of Drill in Inches
1	0.2280	21	0.1590	41	0.0960	61	0.0390
2	0.2210	22	0.1570	42	0.0935	62	0.0380
3	0.2130	23	0.1540	43	0.0890	63	0.0370
4	0.2090	24	0.1520	44	0.0860	64	0.0360
5	0.2055	25	0.1495	45	0.0820	65	0.0350
6	0.2040	26	0.1470	46	0.0810	66	0.0330
7	0.2010	27	0.1440	47	0.0785	67	0.0320
8	0.1990	28	0.1405	48	0.0760	68	0.0310
9	0.1960	29	0.1360	49	0.0730	69	0.0292
10	0.1935	30	0.1285	50	0.0700	70	0.0280
11	0.1910	31	0.1200	51	0.0670	71	0.0260
12	0.1890	32	0.1160	52	0.0635	72	0.0250
13	0.1850	33	0.1130	53	0.0595	73	0.0240
14	0.1820	34	0.1110	54	0.0550	74	0.0225
15	0.1800	35	0.1100	55	0.0520	75	0.0210
16	0.1770	36	0.1065	56	0.0465	76	0.0200
17	0.1730	37	0.1040	57	0.0430	77	0.0180
18	0.1695	38	0.1015	58	0.0420	78	0.0160
19	0.1660	39	0.0995	59	0.0410	79	0.0145
20	0.1610	40	0.0980	60	0.0400	80	0.0135

Decimal Equivalents of Letter Size Drills

Letter	Size of Drill in Inches	Letter	Size of Drill in Inches	Letter	Size of Drill in Inches	Letter	Size of Drill in Inches
Z	0.413	S	0.348	L	0.290	E	0.250
Y	0.404	R	0.339	K	0.281	D	0.246
X	0.397	Q	0.332	J	0.277	C	0.242
W	0.386	P	0.323	I	0.272	B	0.238
V	0.377	O	0.316	H	0.266	A	0.234
U	0.368	N	0.302	G	0.261	.....	.....
T	0.358	M	0.295	F	0.257	.....	.....

Useful Rules

TO FIND CIRCUMFERENCE—

Multiply diameter by.....3.1416
Or divide diameter by.....0.3183

TO FIND DIAMETER—

Multiply circumference by.....0.3183
Or divide circumference by.....3.1416

TO FIND RADIUS—

Multiply circumference by.....0.15915
Or divide circumference by.....6.28318

TO FIND SIDE OF AN INSCRIBED SQUARE—

Multiply diameter by.....0.7071
Or multiply circumference by.....0.2251
Or divide circumference by.....4.4428

TO FIND SIDE OF AN EQUAL SQUARE—

Multiply diameter by.....0.8862
Or divide diameter by.....1.1284
Or multiply circumference by.....0.2821
Or divide circumference by.....3.545

SQUARE—

A side multiplied by 1.4142 equals diameter of its circumscribing circle.
A side multiplied by 4.443 equals circumference of its circumscribing circle.
A side multiplied by 1.128 equals diameter of an equal circle.
A side multiplied by 3.547 equals circumference of an equal circle.

TO FIND THE AREA OF A CIRCLE—

Multiply circumference by one-quarter of the diameter.
Or multiply the square of diameter by.....0.7854
Or multiply the square of circumference by......07958
Or multiply the square of $\frac{1}{2}$ diameter by.....3.1416

TO FIND THE SURFACE OF A SPHERE OR GLOBE—

Multiply the diameter by the circumference.
Or multiply the square of diameter by.....3.1416
Or multiply four times the square of radius by.....3.1416

TO FIND THE CUBIC INCHES (VOLUME) IN A SPHERE OR GLOBE—

Multiply the cube of the diameter by .5236.

TO FIND THE WEIGHT OF BRASS AND COPPER SHEETS, RODS AND BARS—

Ascertain the number of cubic inches in piece and multiply same by weight per cubic inch.

Aluminum	.0924	Copper	.3184
Brass	.2960	Steel	.2816

Or multiply the length by the breadth (in feet) and product by weight in pounds per square foot.

Surveyors or Land Measure

- 1 Link = 7.92 inches.
 1 Rod (or Pole) = 25 links = 16 $\frac{1}{2}$ feet.
 1 Chain = 100 links = 4 rods = 66 feet.
 1 Furlong = 40 rods = 10 chains = $\frac{1}{8}$ mile.
 1 Mile = 320 rods = 5,280 feet.
 1 Acre = 160 square rods = 43,560 square feet.
 1 Square Mile = 640 acres.

The Metric System

MEASURES OF LENGTH

10 millimeters (mm.)	= 1 centimeter	.....cm.
10 centimeters	= 1 decimeter	.....dm.
10 decimeters	= 1 meter	.....m.
10 meters	= 1 dekameter	.....Dm.
10 dekameters	= 1 hektometer	.....Hm.
10 hektometers	= 1 kilometer	.....Km.

$$1 \text{ meter} = \begin{cases} 39.37 \text{ inches.} \\ 3.28083 \text{ feet.} \\ 1.0936 \text{ yards.} \end{cases}$$

$$1 \text{ centimeter} = .3937 \text{ inch.}$$

$$1 \text{ millimeter} = \begin{cases} .03937 \text{ inch, or} \\ \text{approximately } \frac{1}{25} \text{ inch.} \end{cases}$$

$$1 \text{ kilometer} = 0.62137 \text{ mile.}$$

$$1 \text{ foot} = .3048 \text{ meter.}$$

$$1 \text{ inch} = \begin{cases} 2.54 \text{ centimeters.} \\ 25.4 \text{ millimeters.} \end{cases}$$

MEASURES OF SURFACE

$$1 \text{ square meter} = \begin{cases} 10.764 \text{ square feet.} \\ 1.196 \text{ square yards.} \end{cases}$$

$$1 \text{ square centimeter} = .155 \text{ square inch.}$$

$$1 \text{ square millimeter} = .00155 \text{ sq. inch.}$$

$$1 \text{ square yard} = .836 \text{ square meter.}$$

$$1 \text{ square foot} = .0929 \text{ square meter.}$$

$$1 \text{ square inch} = \begin{cases} 6.452 \text{ sq. centimeters.} \\ 645.2 \text{ sq. millimeters.} \end{cases}$$

MEASURES OF VOLUME AND CAPACITY

$$1 \text{ cubic meter} = \begin{cases} 35.314 \text{ cubic feet.} \\ 1.308 \text{ cubic yards.} \\ 264.2 \text{ gallons (231} \\ \text{cubic inches).} \end{cases}$$

$$1 \text{ cubic decimeter} = \begin{cases} 61.023 \text{ cubic in.} \\ .0353 \text{ cubic feet.} \end{cases}$$

$$1 \text{ cubic centimeter} = .061 \text{ cubic inch.}$$

$$1 \text{ liter} = \begin{cases} 1 \text{ cubic decimeter.} \\ 61.023 \text{ cubic inches.} \\ .0353 \text{ cubic foot.} \\ 1.0567 \text{ quarts (U. S.).} \\ .2642 \text{ gallon (U. S.).} \\ 2.202 \text{ lbs. of water at } 62^{\circ} \text{ F.} \end{cases}$$

$$1 \text{ cubic yard} = .7645 \text{ cubic meter.}$$

$$1 \text{ cubic foot} = \begin{cases} .02832 \text{ cubic meter.} \\ 28.317 \text{ cubic decimeters.} \\ 28.317 \text{ liters.} \end{cases}$$

$$1 \text{ cubic in.} = 16.393 \text{ cubic centimeters.}$$

$$1 \text{ gallon (British)} = 4.543 \text{ liters.}$$

$$1 \text{ gallon (U. S.)} = 3.785 \text{ liters.}$$

MEASURES OF WEIGHT

$$1 \text{ gram} = 15.432 \text{ grains.}$$

$$1 \text{ kilogram} = 2.2046 \text{ pounds.}$$

$$1 \text{ metric ton} = \begin{cases} .9842 \text{ ton of } 2240 \text{ lbs.} \\ 19.68 \text{ cwts.} \\ 2204.6 \text{ lbs.} \end{cases}$$

$$1 \text{ grain} = .0648 \text{ gram.}$$

$$1 \text{ ounce avoirdupois} = 28.35 \text{ grams.}$$

$$1 \text{ pound} = 4536 \text{ kilogram.}$$

$$1 \text{ ton of } 2240 \text{ lbs.} = \begin{cases} 1.016 \text{ metric ton.} \\ 1016 \text{ kilograms.} \end{cases}$$

Miscellaneous

$$1 \text{ kilogram per meter} = .6720 \text{ pounds per foot.}$$

$$1 \text{ gram per square millimeter} = 1.422 \text{ pounds per square inch.}$$

$$1 \text{ kilogram per square meter} = 0.2084 \text{ pounds per square foot.}$$

$$1 \text{ kilogram per cubic meter} = .0624 \text{ pounds per cubic foot.}$$

$$1 \text{ degree centigrade} = 1.8 \text{ degrees Fahrenheit.}$$

$$1 \text{ pound per foot} = 1.488 \text{ kilograms per meter.}$$

$$1 \text{ pound per square foot} = 4.882 \text{ kilograms per square meter.}$$

$$1 \text{ pound per cubic foot} = 16.02 \text{ kilograms per cubic meter.}$$

$$1 \text{ degree Fahrenheit} = .5556 \text{ degrees centigrade.}$$

$$1 \text{ Calorie (French Thermal Unit)} = 3.968 \text{ B. T. U. (British Thermal Unit).}$$

$$1 \text{ Horse Power} = \begin{cases} 33,000 \text{ foot pounds per minute.} \\ 746 \text{ Watts.} \end{cases}$$

$$1 \text{ Watt (Unit of Electrical Power)} = \begin{cases} .00134 \text{ Horse Power.} \\ 44.22 \text{ foot pounds per minute.} \\ 1000 \text{ Watts.} \end{cases}$$

$$1 \text{ Kilowatt} = \begin{cases} 1.34 \text{ Horse Power.} \\ 44,220 \text{ foot pounds per minute.} \end{cases}$$

Sizes of Tap Drills For Machine Screw Taps

A. S. M. E. Standard

Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.
0-80	56	5-44	37	10-24	25	20-16	G
1-56	54	6-32	36	10-28	23	20-18	$17\frac{1}{64}$
1-64	53	6-36	34	10-30	22	20-20	I
1-72	53	6-40	33	10-32	21	22-16	$\frac{9}{32}$
2-56	50	7-30	31	12-24	16	22-18	L
2-64	50	7-32	31	12-28	14	24-16	$\frac{5}{16}$
3-48	47	7-36	$\frac{1}{8}$	12-32	13	24-18	O
3-56	45	8-30	30	14-20	10	26-14	$21\frac{1}{64}$
4-32	45	8-32	29	14-24	7	26-16	R
4-36	44	8-36	29	16-18	3	28-14	T
4-40	43	8-40	28	16-20	$\frac{7}{32}$	28-16	$23\frac{1}{64}$
4-48	42	9-24	29	16-22	2	30-14	V
5-36	40	9-30	27	18-18	B	30-16	$25\frac{1}{64}$
5-40	38	9-32	26	18-20	D	.....	.....

United States Standard

Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.
$\frac{1}{16}$ -64	56	$\frac{7}{16}$ -14	U	$\frac{13}{16}$ -10	$\frac{23}{32}$	$1\frac{3}{8}$ -6	$1\frac{1}{32}$
$\frac{1}{8}$ -40	38	$\frac{1}{2}$ -13	$27\frac{1}{64}$	$\frac{7}{8}$ -9	$\frac{49}{64}$	$1\frac{1}{2}$ -6	$1\frac{11}{32}$
$\frac{3}{16}$ -32	22	$\frac{9}{16}$ -12	$31\frac{1}{64}$	$\frac{15}{16}$ -9	$\frac{53}{64}$	$1\frac{5}{8}$ -5 $\frac{1}{2}$	$1\frac{29}{64}$
$\frac{1}{4}$ -20	7	$\frac{5}{8}$ -11	$17\frac{32}{32}$	1-8	$\frac{7}{8}$	$1\frac{3}{4}$ -5	1 $\frac{19}{16}$
$\frac{5}{16}$ -18	F	$\frac{11}{16}$ -11	$19\frac{32}{32}$	$1\frac{1}{8}$ -7	$\frac{63}{64}$	$1\frac{7}{8}$ -5	$1\frac{11}{16}$
$\frac{3}{8}$ -16	$\frac{5}{16}$	$\frac{3}{4}$ -10	$21\frac{32}{32}$	$1\frac{1}{4}$ -7	$1\frac{1}{64}$	2-4 $\frac{1}{2}$	$1\frac{23}{32}$

S. A. E. Standard

Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.
$\frac{1}{4}$ -28	3	$\frac{1}{2}$ -20	$29\frac{64}{64}$	$\frac{3}{4}$ -16	$\frac{11}{16}$	$1\frac{1}{4}$ -12	$1\frac{11}{64}$
$\frac{5}{16}$ -24	I	$\frac{9}{16}$ -18	$33\frac{64}{64}$	$\frac{7}{8}$ -14	$\frac{13}{16}$	$1\frac{3}{8}$ -12	$1\frac{19}{64}$
$\frac{3}{8}$ -24	Q	$\frac{5}{8}$ -18	$37\frac{64}{64}$	1-14	$\frac{15}{16}$	$1\frac{1}{2}$ -12	$1\frac{27}{64}$
$\frac{7}{16}$ -20	$25\frac{64}{64}$	$\frac{11}{16}$ -16	$\frac{5}{8}$	$1\frac{1}{8}$ -12	$1\frac{1}{64}$	.....	.....

Briggs Pipe Standard

Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.	Size of Tap, No.	Size of Drill, No.
$\frac{1}{8}$ -27	R	$\frac{1}{2}$ -14	$23\frac{32}{32}$	$1\frac{1}{4}$ -11 $\frac{1}{2}$	$1\frac{1}{2}$	2 $\frac{1}{2}$ -8	$2\frac{5}{8}$
$\frac{1}{4}$ -18	$\frac{7}{16}$	$\frac{3}{4}$ -14	$59\frac{64}{64}$	$1\frac{1}{2}$ -11 $\frac{1}{2}$	$1\frac{17}{64}$	3-8	$3\frac{3}{4}$
$\frac{3}{8}$ -18	$87\frac{64}{64}$	1-11 $\frac{1}{2}$	$15\frac{32}{32}$	2-11 $\frac{1}{2}$	$2\frac{7}{32}$	.....	.....

Different Standards for Wire Gages in Use in the United States

Dimensions of Sizes in Decimal Parts of an Inch

Number of Wire Gage	Ameri- can or B. & S.	Birm- ing- ham or Stubs' Iron Wire	Wash- burn & Moen, Wor- ces- ter, Mass.	W. & M. Steel Music Wire	New Amer- ican S. & W. Co.'s Music Wire Gage	Im- per- ial Wire Gage	Stubs' Steel Wire	U. S. Standard Gage for Sheet and Plate Iron and Steel	Number of Wire Gage
00000000				.0083					00000000
0000000				.0087					0000000
000000				.0095	.004	.464		.46875	000000
00000					.010	.432		.4375	00000
0000	.460	.454	.3938	.011	.006	.400		.40625	0000
000	.40964	.425	.3625	.012	.007	.372		.375	000
00	.3648	.380	.3310	.0133	.008	.348		.34375	00
0	.32486	.340	.3065	.0144	.009	.324		.3125	0
1	.2893	.300	.2830	.0156	.010	.300	.227	.28125	1
2	.25763	.284	.2625	.0166	.011	.276	.219	.265625	2
3	.22942	.259	.2437	.0178	.012	.252	.212	.250	3
4	.20431	.238	.2253	.0188	.013	.232	.207	.234375	4
5	.18194	.220	.2070	.0202	.014	.212	.204	.21875	5
6	.16202	.203	.1920	.0215	.016	.192	.201	.203125	6
7	.14428	.180	.1770	.023	.018	.176	.199	.1875	7
8	.12849	.165	.1620	.0243	.020	.160	.197	.171875	8
9	.11443	.148	.1483	.0256	.022	.144	.194	.15625	9
10	.10189	.134	.1350	.027	.024	.128	.191	.140625	10
11	.090742	.120	.1205	.0284	.026	.116	.188	.125	11
12	.080808	.109	.1055	.0296	.029	.104	.185	.109375	12
13	.071961	.095	.0915	.0314	.031	.092	.182	.09375	13
14	.064084	.083	.0800	.0326	.033	.080	.180	.078125	14
15	.057068	.072	.0720	.0345	.035	.072	.178	.0703125	15
16	.05082	.065	.0625	.036	.037	.064	.175	.0625	16
17	.045257	.058	.0540	.0377	.039	.056	.172	.05625	17
18	.040303	.049	.0475	.0395	.041	.048	.168	.050	18
19	.03589	.042	.0410	.0414	.043	.040	.164	.04375	19
20	.031961	.035	.0348	.0434	.045	.036	.161	.0375	20
21	.028462	.032	.03175	.046	.047	.032	.157	.034375	21
22	.025347	.028	.0286	.0483	.049	.028	.155	.03125	22
23	.022571	.025	.0258	.051	.051	.024	.153	.028125	23
24	.0201	.022	.0230	.055	.055	.022	.151	.025	24
25	.0179	.020	.0204	.0586	.059	.020	.148	.021875	25
26	.01594	.018	.0181	.0626	.063	.018	.146	.01875	26
27	.014195	.016	.0173	.0658	.067	.0164	.143	.0171875	27
28	.012641	.014	.0162	.072	.071	.0149	.139	.015625	28
29	.011257	.013	.0150	.076	.075	.0136	.134	.0140625	29
30	.010025	.012	.0140	.080	.080	.0124	.127	.0125	30
31	.008928	.010	.0132		.085	.0116	.120	.0109375	31
32	.00795	.009	.0128		.090	.0108	.115	.01015625	32
33	.00708	.008	.0118		.095	.0100	.112	.009375	33
34	.006304	.007	.0104			.0092	.110	.00859375	34
35	.005614	.005	.0095			.0084	.108	.0078125	35
36	.005	.004	.0090			.0076	.106	.00703125	36
37	.004453					.0068	.103	.006640625	37
38	.003965					.0060	.101	.00625	38
39	.003531					.0052	.099		39
40	.003144					.0048	.097		40

Table of Pitch Diameters for U. S. Standard Form of Screw Threads

Caliper Reading or Pitch Diameter for U. S. Threads=D—.6495 N							
Diam., Inches	Threads Per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread	Diam., Inches	Threads Per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread
D	N	D—.6495 N	.6495 N	D	N	D—.6495 N	.6495 N
NOTE.—As there is no standard of diameter for the finer pitches this column is left blank.	64		.0101	1/4	20	.2175	.0325
	62		.0105	5/16	18	.2764	.0361
	60		.0108	3/8	16	.3344	.0406
	58		.0112	7/8	14	.3911	.0464
	56		.0116	1/2	13	.4501	.0499
	54		.0120	5/16	12	.5084	.0541
	52		.0125	3/8	11	.5660	.0590
	50		.0130	1/4	10	.6851	.0649
	48		.0135	3/8	9	.8029	.0721
	46		.0141	1/2	8	.9188	.0812
	44		.0148	1 1/8	7	1.0322	.0928
	42		.0155	1 1/4	7	1.1572	.0928
	40		.0162	1 1/2	6	1.2668	.1082
	38		.0171	1 3/8	6	1.3918	.1082
	36		.0180	1 1/2	5 1/2	1.5070	.1180
	34		.0191	1 3/4	5	1.6201	.1299
	32		.0203	1 7/8	5	1.7451	.1299
	30		.0217	2	4 1/2	1.8557	.1443
	28		.0232	2 1/2	4	2.3376	.1624
	26		.0250	3	3 1/2	2.8145	.1855
	24		.0271	3 1/2	3 3/4	3.3002	.1998
	22		.0295	4	3	3.7835	.2165

Table of Pitch Diameters for S. A. E. Standard Form of Screw Threads

Caliper Reading or Pitch Diameter for S. A. E. Threads=D—.6495 N							
Diam., Inches	Threads Per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread	Diam., Inches	Threads Per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread
D	N	D—.6495 N	.6495 N	D	N	D—.6495 N	.6495 N
1/4	28	.2268	.0232	3/4	16	.7094	.0406
5/16	24	.2854	.0271	1/2	14	.8286	.0464
3/8	24	.3479	.0271	1	14	.9536	.0464
7/8	20	.4050	.0324	1 1/8	12	1.0709	.0541
1 1/16	20	.4675	.0324	1 1/4	12	1.1959	.0541
1 1/8	18	.5265	.0360	1 3/8	12	1.3209	.0541
1 1/4	18	.5890	.0360	1 1/2	12	1.4459	.0541
1 3/8	16	.6469	.0406				

Table of Pitch Diameters for A. S. M. E. Standard Form of Screw Threads

Caliper Reading or Pitch Diameter for A. S. M. E. Threads=D—.6495 N									
No.	Basic and Max. Outside Diam.	Threads per Inch	Caliper Reading or Max. Pitch Diam.	Single Depth of Thread	No.	Basic and Max. Outside Diam.	Threads per Inch	Caliper Reading or Max. Pitch Diam.	Single Depth of Thread
	D	N	D—.6495 N	.6495 N		D	N	D—.6495 N	.6495 N
0	.060	80	.0519	.0081	12	.216	28	.1928	.0232
1	.073	72	.0640	.0090	14	.242	24	.2149	.0271
2	.086	64	.0759	.0101	16	.268	22	.2385	.0295
3	.099	56	.0874	.0116	18	.294	20	.2615	.0325
4	.112	48	.0985	.0135	20	.320	20	.2875	.0325
5	.125	44	.1102	.0148	22	.346	18	.3099	.0361
6	.138	40	.1218	.0162	24	.372	16	.3314	.0406
7	.151	36	.1330	.0180	26	.398	16	.3574	.0406
8	.164	36	.1460	.0180	28	.424	14	.3776	.0464
9	.177	32	.1567	.0203	30	.450	14	.4036	.0464
10	.190	30	.1684	.0217					

Table of Pitch Diameters For "Sharp V" Standard Form of Screw Threads

Caliper Reading or Pitch Diameter for "Sharp V" Threads = $D - \frac{.866}{N}$

Diam., Inches	Threads per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread	Diam., Inches *	Threads per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread
D	N	$D - \frac{.866}{N}$	$\frac{.866}{N}$	D	N	$D - \frac{.866}{N}$	$\frac{.866}{N}$
NOTE.—As there is no standard of diameter for the finer pitches this column is left blank.	64	.....	.0135	$\frac{1}{4}$	24	.2139	.0361
	62	.....	.0140	$\frac{1}{4}$	20	.2067	.0433
	60	.....	.0144	$\frac{5}{16}$	20	.2692	.0433
	58	.....	.0149	$\frac{5}{16}$	18	.2644	.0481
	56	.....	.0155	$\frac{3}{8}$	18	.3269	.0481
	54	.....	.0161	$\frac{3}{8}$	16	.3209	.0541
	52	.....	.0167	$\frac{7}{16}$	16	.3834	.0541
	50	.....	.0173	$\frac{7}{16}$	14	.3756	.0619
	48	.....	.0180	$\frac{1}{2}$	14	.4381	.0619
	46	.....	.0188	$\frac{1}{2}$	13	.4334	.0666
	44	.....	.0197	$\frac{1}{2}$	12	.4278	.0722
	42	.....	.0206	$\frac{9}{16}$	14	.5006	.0619
	40	.....	.0217	$\frac{9}{16}$	12	.4903	.0722
	38	.....	.0228	$\frac{5}{8}$	11	.5463	.0787
	36	.....	.0241	$\frac{5}{8}$	10	.5384	.0866
	34	.....	.0255	$\frac{11}{16}$	10	.6009	.0866
	32	.....	.0271	$\frac{3}{4}$	10	.6634	.0866
	30	.....	.0289	$\frac{7}{8}$	9	.7788	.0962
28	.....	.....	.0309	1	8	.8918	.1082
26	.....	.....	.0333	$1 \frac{1}{8}$	8	1.0168	.1082
.....	.....	.....	.....	$1 \frac{1}{4}$	7	1.1263	.1237
.....	.....	.....	.....	$1 \frac{1}{2}$	6	1.3537	.1443

*These figures give the outside diameter for screws with threads cut theoretically sharp. As it is not practical to make these threads sharp, the outside diameter will measure less than the figures given, the pitch diameter remaining the same.

Table of Pitch Diameters For Whitworth Standard of Screw Threads

Caliper Reading or Pitch Diameter for Whitworth Threads = $D - \frac{.640}{N}$

Diam., Inches	Threads per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread	Diam., Inches	Threads per Inch	Caliper Reading or Pitch Diam.	Single Depth of Thread
D	N	$D - \frac{.640}{N}$	$\frac{.640}{N}$	D	N	$D - \frac{.640}{N}$	$\frac{.640}{N}$
.....	48	.....	.0133	$\frac{1}{2}$	12	.4467	.0533
.....	46	.....	.0139	$\frac{9}{16}$	12	.5092	.0533
.....	44	.....	.0146	$\frac{5}{8}$	11	.5668	.0582
.....	42	.....	.0152	$\frac{11}{16}$	11	.6293	.0582
.....	40	.....	.0160	$\frac{3}{4}$	10	.6860	.0640
.....	38	.....	.0168	$\frac{13}{16}$	10	.7485	.0640
.....	36	.....	.0178	$\frac{7}{8}$	9	.8039	.0711
.....	34	.....	.0188	$\frac{15}{16}$	9	.8664	.0711
.....	32	.....	.0200	1	8	.9200	.0800
.....	30	.....	.0213	$1 \frac{1}{8}$	7	1.0336	.0914
.....	28	.....	.0229	$1 \frac{1}{4}$	7	1.1586	.0914
.....	26	.....	.0246	$1 \frac{3}{8}$	6	1.2684	.1066
.....	24	.....	.0267	$1 \frac{1}{2}$	6	1.3934	.1066
.....	22	.....	.0291	$1 \frac{3}{4}$	5	1.4970	.1280
$\frac{1}{4}$	20	.2180	.0320	$1 \frac{3}{4}$	5	1.6220	.1280
$\frac{5}{16}$	18	.2769	.0355	$1 \frac{1}{8}$	4 $\frac{1}{2}$	1.7328	.1422
$\frac{3}{8}$	16	.3350	.0400	2	4 $\frac{1}{2}$	1.8578	.1422
$\frac{7}{16}$	14	.3918	.0457	$2 \frac{1}{8}$	4 $\frac{1}{2}$	1.9828	.1422

Table of Pitch Diameters for Metric Standard of Screw Threads.... See page 117.

**Table of Pitch Diameters
For Metric Standard of Screw Threads**

Size mm.	Pitch		Size mm.	Pitch	
	Intl. Std.	French Std.		Intl. Std.	French Std.
2	.45	.50	20	2.50	2.50
3	.55	.50	22	2.50	2.50
4	.70	.75	24	3.00	3.00
5	.85	.75	26	3.00	3.00
6	1.00	1.00	27	3.00	3.00
7	1.00	1.00	28	3.50	3.50
8	1.25	1.00	30	3.50	3.50
9	1.25	1.00	32	3.50	3.50
10	1.50	1.50	33	4.00	4.00
11	1.50	1.50	34	4.00	4.00
12	1.75	2.00	36	4.00	4.00
14	2.00	2.00	38	4.00	4.00
16	2.00	2.00	39	4.00	4.00
18	2.50	2.50	40	4.00	4.00

Double Depth of Threads

Threads per Inch	Double Depth U. S. Standard Thread	Double Depth Sharp V Thread	Double Depth Whitworth Standard Thread	Threads per Inch	Double Depth U. S. Standard Thread	Double Depth Sharp V Thread	Double Depth Whitworth Standard Thread
2 1/4	0.5774	0.7698	0.5692	30	0.0433	0.0577	0.0427
2 3/8	0.5470	0.7293	0.5392	32	0.0406	0.0541	0.0400
2 1/2	0.5196	0.6928	0.5123	34	0.0382	0.0509	0.0377
2 5/8	0.4949	0.6598	0.4879	36	0.0361	0.0481	0.0356
2 3/4	0.4724	0.6298	0.4657	38	0.0342	0.0456	0.0337
2 7/8	0.4518	0.6025	0.4454	40	0.0325	0.0433	0.0320
3	0.4330	0.5774	0.4269	42	0.0309	0.0412	0.0305
3 1/4	0.3997	0.5329	0.3940	44	0.0295	0.0394	0.0291
3 1/2	0.3712	0.4949	0.3659	46	0.0282	0.0377	0.0278
4	0.3248	0.4330	0.3202	48	0.0271	0.0361	0.0267
4 1/2	0.2887	0.3849	0.2846	50	0.0260	0.0346	0.0256
5	0.2598	0.3464	0.2561	52	0.0250	0.0333	0.0246
5 1/2	0.2362	0.3149	0.2328	54	0.0241	0.0321	0.0237
6	0.2165	0.2887	0.2134	56	0.0232	0.0309	0.0229
7	0.1856	0.2474	0.1830	58	0.0224	0.0299	0.0221
8	0.1624	0.2165	0.1601	60	0.0217	0.0289	0.0213
9	0.1443	0.1925	0.1423	62	0.0209	0.0279	0.0206
10	0.1299	0.1732	0.1281	64	0.0203	0.0271	0.0200
11	0.1181	0.1575	0.1164	66	0.0197	0.0263	0.0194
12	0.1083	0.1443	0.1067	68	0.0191	0.0255	0.0188
13	0.0999	0.1332	0.0985	70	0.0185	0.0248	0.0183
14	0.0928	0.1237	0.0915	72	0.0180	0.0241	0.0178
15	0.0866	0.1155	0.0854	74	0.0175	0.0234	0.0173
16	0.0812	0.1083	0.0800	76	0.0171	0.0228	0.0167
18	0.0722	0.0962	0.0711	78	0.0167	0.0222	0.0164
20	0.0650	0.0866	0.0640	80	0.0162	0.0217	0.0160
22	0.0590	0.0787	0.0582	82	0.0158	0.0211	0.0156
24	0.0541	0.0722	0.0534	84	0.0155	0.0206	0.0152
26	0.0500	0.0666	0.0493	86	0.0151	0.0201	0.0148
27	0.0481	0.0642	0.0474	88	0.0148	0.0196	0.0145
28	0.0464	0.0619	0.0457	90	0.0144	0.0192	0.0142

$$\text{Double Depth for U. S. Standard Thread} = \frac{1.299}{N}$$

$$\text{Double Depth for Sharp V Thread} = \frac{1.732}{N}$$

$$\text{Double Depth for Whitworth Standard Thread} = \frac{1.281}{N}$$

29° Screw Thread

Acme Standard

The various parts of the 29° screw thread, Acme Standard, are obtained as follows:

$$\text{Width of point of tool for screw or tap thread} = \frac{.3707}{\text{Threads per Inch}} - .0052$$

$$\text{Width of screw or nut thread} = \frac{.3707}{\text{Threads per Inch}}$$

$$\text{Diameter of tap} = \text{Diameter of screw} + .020$$

$$\text{Diameter of tap or screw at root} = \text{Diameter of screw} - \left(\frac{1}{\text{Threads per Inch}} + .020 \right)$$

$$\text{Depth of thread} = \frac{1}{2 \times \text{Threads per Inch}} + .010$$

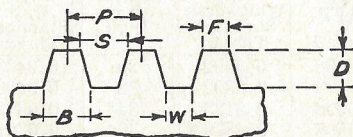


Table of Thread Parts

	D	F	W	S	B
Threads per Inch	Depth of Thread	Width of Flat at Top of Tooth	Width of Flat at Bottom of Thread	Width of Space Between Top of Teeth	Width of Tooth at Root
1	.5100	.3707	.3655	.6293	.6345
1 1/3	.3851	.2781	.2729	.4721	.4773
1 1/2	.3433	.2471	.2419	.4196	.4248
1 3/4	.2957	.2118	.2066	.3596	.3648
2	.2600	.1854	.1802	.3146	.3198
2 1/2	.2100	.1483	.1431	.2517	.2569
3	.1767	.1236	.1184	.2097	.2149
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0530	.0478	.0898	.0950
8	.0725	.0463	.0411	.0787	.0839
9	.0656	.0412	.0360	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681
12	.0517	.0309	.0257	.0524	.0576

United States Standard Gage For Sheet and Plate Iron and Steel

Number of Gage	Approximate thickness in fractions of an inch	Approximate thickness in decimal part of an inch	Weight per square foot in ounces avoirdupois	Weight per square foot in pounds avoirdupois
0000000	$\frac{1}{2}$	.5	320	20.00
0000000	$\frac{15}{32}$	.46875	300	18.75
000000	$\frac{7}{16}$	.4375	280	17.50
00000	$\frac{13}{32}$	.40625	260	16.25
0000	$\frac{3}{8}$	.375	240	15.00
000	$\frac{11}{32}$	.34375	220	13.75
00	$\frac{5}{16}$	.3125	200	12.50
0	$\frac{9}{32}$	.28125	180	11.25
1	$\frac{17}{64}$	.265625	170	10.625
2	$\frac{1}{4}$	.25	160	10.00
3	$\frac{15}{64}$	.234375	150	9.375
4	$\frac{7}{32}$	.21875	140	8.75
5	$\frac{13}{64}$	.203125	130	8.125
6	$\frac{3}{16}$	.1875	120	7.5
7	$\frac{11}{64}$	.171875	110	6.875
8	$\frac{5}{32}$	.15625	100	6.25
9	$\frac{9}{64}$	.140625	90	5.625
10	$\frac{1}{8}$	.125	80	5.00
11	$\frac{7}{64}$	.109375	70	4.375
12	$\frac{3}{32}$	.09375	60	3.75
13	$\frac{5}{64}$	.078125	50	3.125
14	$\frac{9}{128}$	.0703125	45	2.8125
15	$\frac{1}{16}$	.0625	40	2.5
16	$\frac{9}{160}$	.05625	36	2.25
17	$\frac{1}{20}$	.05	32	2.
18	$\frac{7}{160}$	.04375	28	1.75
19	$\frac{3}{80}$	.0375	24	1.50
20	$\frac{11}{320}$	.034375	22	1.375
21	$\frac{1}{32}$	.03125	20	1.25
22	$\frac{9}{320}$	.028125	18	1.125
23	$\frac{1}{40}$	.025	16	1.
24	$\frac{7}{320}$	.021875	14	.875
25	$\frac{3}{160}$	.01875	12	.75
26	$\frac{11}{640}$	.0171875	11	.6875
27	$\frac{1}{64}$	.015625	10	.625
28	$\frac{9}{640}$	.0140625	9	.5625
29	$\frac{1}{80}$	.0125	8	.5
30	$\frac{7}{640}$	.0109375	7	.4375
31	$\frac{13}{1280}$	.01015625	$6\frac{1}{2}$	.40625
32	$\frac{3}{320}$	.009375	6	.375
33	$\frac{11}{1280}$	.00859375	$5\frac{1}{2}$	.34375
34	$\frac{5}{640}$	.0078125	5	.3125
35	$\frac{9}{1280}$	.00703125	$4\frac{1}{2}$	.28125
36	$\frac{17}{2560}$	.006640625	$4\frac{1}{4}$	.265625
37	$\frac{1}{160}$	.00625	4	.25
38	$\frac{15}{2560}$	.005859375	$3\frac{3}{4}$	.234375
39	$\frac{7}{1280}$	.00546875	$3\frac{1}{2}$	.21875
40	$\frac{27}{5120}$	.0052734375	$3\frac{3}{8}$	.2109375
41	$\frac{13}{2560}$	.005078125	$3\frac{1}{4}$	.203125
42	$\frac{25}{5120}$	.0048828125	$3\frac{1}{8}$	.1953125
43	$\frac{3}{640}$	.0046875	3	.1875
44				

Weight of Square and Round Bars of Steel

In Pounds Per Linear Foot

Based on 489.6 lbs. per cubic foot.

For Wrought Iron deduct 2 per cent. For High-Speed Steel add 11 per cent.

Thickness or Diameter, Inches	Weight of Square Bar 1 foot long	Weight of Round Bar 1 foot long	Thickness or Diameter, Inches	Weight of Square Bar 1 foot long	Weight of Round Bar 1 foot long
$\frac{1}{32}$	.0033	.0026	3	30.60	24.03
$\frac{1}{16}$	.0133	.0104	$3\frac{1}{8}$	33.20	26.08
$\frac{1}{8}$	.0531	.0417	$3\frac{1}{4}$	35.92	28.20
$\frac{3}{16}$	.1195	.0938	$3\frac{3}{8}$	38.73	30.42
$\frac{1}{4}$	.2123	.1669	$3\frac{1}{2}$	41.65	32.71
$\frac{5}{16}$	.3333	.2608	$3\frac{5}{8}$	44.68	35.09
$\frac{3}{8}$	.4782	.3756	$3\frac{3}{4}$	47.82	37.56
$\frac{7}{16}$	.6508	.5111	$3\frac{7}{8}$	51.05	40.10
$\frac{1}{2}$	.8500	.6676	4	54.40	42.73
$\frac{9}{16}$	1.076	.8449	$4\frac{1}{4}$	61.41	48.24
$\frac{5}{8}$	1.328	1.043	$4\frac{1}{2}$	68.85	54.07
$\frac{11}{16}$	1.608	1.262	$4\frac{3}{4}$	76.71	60.25
$\frac{3}{4}$	1.913	1.502	5	85.00	66.76
$\frac{13}{16}$	2.245	1.763	$5\frac{1}{4}$	93.72	73.60
$\frac{7}{8}$	2.603	2.044	$5\frac{1}{2}$	102.8	80.77
$\frac{15}{16}$	2.989	2.347	$5\frac{3}{4}$	112.4	88.29
1	3.400	2.670	6	122.4	96.14
$1\frac{1}{16}$	3.838	3.014	$6\frac{1}{4}$	132.8	104.3
$1\frac{1}{8}$	4.303	3.379	$6\frac{1}{2}$	143.6	112.8
$1\frac{3}{16}$	4.795	3.766	$6\frac{3}{4}$	154.9	121.7
$1\frac{1}{4}$	5.312	4.173	7	166.6	130.9
$1\frac{5}{16}$	5.857	4.600	$7\frac{1}{4}$	178.7	140.4
$1\frac{3}{8}$	6.428	5.019	$7\frac{1}{2}$	191.3	150.2
$1\frac{7}{16}$	7.026	5.518	$7\frac{3}{4}$	204.2	160.3
$1\frac{1}{2}$	7.650	6.008	8	217.6	171.0
$1\frac{9}{16}$	8.301	6.520	$8\frac{1}{4}$	231.4	181.8
$1\frac{5}{8}$	8.978	7.051	$8\frac{1}{2}$	245.6	193.0
$1\frac{11}{16}$	9.682	7.604	$8\frac{3}{4}$	260.3	204.4
$1\frac{3}{4}$	10.41	8.178	9	275.4	216.3
$1\frac{13}{16}$	11.17	8.773	$9\frac{1}{4}$	291.1	228.5
$1\frac{7}{8}$	11.95	9.388	$9\frac{1}{2}$	306.8	241.0
$1\frac{15}{16}$	12.76	10.02	$9\frac{3}{4}$	323.2	253.9
2	13.60	10.68	10	340.0	267.0
$2\frac{1}{8}$	15.35	12.06	$10\frac{1}{4}$	357.2	280.6
$2\frac{1}{4}$	17.22	13.52	$10\frac{1}{2}$	374.9	294.4
$2\frac{3}{8}$	19.18	15.07	$10\frac{3}{4}$	392.9	308.6
$2\frac{1}{2}$	21.25	16.69	11	411.4	323.1
$2\frac{5}{8}$	23.43	18.40	$11\frac{1}{4}$	430.3	337.9
$2\frac{3}{4}$	25.00	20.20	$11\frac{1}{2}$	449.6	353.1
$2\frac{7}{8}$	28.10	22.07	$11\frac{3}{4}$	469.4	368.6

To compute the weight of Sheet Steel:

Multiply the thickness by 40.8; the result is the weight in pounds per square foot.

Example: A piece of Sheet Steel is .005" thick, its weight is $.005 \times 40.8 = .204$ lbs. per square foot.

To compute the weight of Sheet Iron:

Multiply the thickness by 40; the result is the weight in pounds per square foot.

Example: A piece of Sheet Iron is .005" thick, its weight is $.005 \times 40 = .200$ lbs. per square foot.

Weight of Iron and Steel Sheets

Thickness by Birmingham Gage <i>Steel</i>				Thickness by American <i>wire</i> or (B. & S.) Gage			
No. of Gage	Thick- ness, Inches	Weight per Sq. Ft.		No. of Gage	Thick- ness, Inches	Weight per Sq. Ft.	
		Iron	Steel			Iron	Steel
0000	.454	18.16	18.52	0000	.46	18.40	18.77
000	.425	17.00	17.34	000	.4096	16.38	16.71
00	.38	15.20	15.30	00	.3648	14.59	14.88
0	.34	13.60	13.87	0	.3249	13.00	13.26
1	.3	12.00	12.24	1	.2893	11.57	11.80
2	.284	11.36	11.59	2	.2576	10.30	10.51
3	.259	10.36	10.57	3	.2294	9.18	9.36
4	.233	9.52	9.71	4	.2043	8.17	8.34
5	.22	8.80	8.98	5	.1819	7.28	7.42
6	.203	8.12	8.28	6	.1620	6.48	6.61
7	.18	7.20	7.34	7	.1443	5.77	5.89
8	.165	6.60	6.73	8	.1285	5.14	5.24
9	.148	5.92	6.04	9	.1144	4.58	4.67
10	.134	5.36	5.47	10	.1019	4.08	4.16
11	.12	4.80	4.90	11	.0907	3.63	3.70
12	.109	4.36	4.45	12	.0808	3.23	3.30
13	.095	3.80	3.88	13	.0720	2.88	2.94
14	.083	3.32	3.39	14	.0641	2.56	2.62
15	.072	2.88	2.94	15	.0571	2.28	2.33
16	.065	2.60	2.65	16	.0508	2.03	2.07
17	.058	2.32	2.37	17	.0453	1.81	1.85
18	.049	1.96	2.00	18	.0403	1.61	1.64
19	.042	1.68	1.71	19	.0359	1.44	1.46
20	.035	1.40	1.43	20	.0320	1.28	1.31
21	.032	1.28	1.31	21	.0285	1.14	1.16
22	.028	1.12	1.14	22	.0253	1.01	1.03
23	.025	1.00	1.02	23	.0226	.904	.922
24	.022	.88	.898	24	.0201	.804	.820
25	.02	.80	.816	25	.0179	.716	.730
26	.018	.72	.734	26	.0159	.636	.649
27	.016	.64	.653	27	.0142	.568	.579
28	.014	.56	.571	28	.0126	.504	.514
29	.013	.52	.530	29	.0113	.452	.461
30	.012	.48	.490	30	.0100	.400	.408
31	.01	.40	.408	31	.0089	.356	.363
32	.009	.36	.367	32	.0080	.320	.326
33	.008	.32	.326	33	.0071	.284	.290
34	.007	.28	.286	34	.0063	.252	.257
35	.005	.20	.204	35	.0056	.224	.228

Specific gravity.....	Iron 7.7	Steel 7.854
Weight per cubic foot.....	Iron 480.	Steel 489.6
Weight per cubic inch.....	Iron .2778	Steel .2833

As many gages differ, and even the thickness of a certain specified gage is not assumed the same by all manufacturers, orders for sheets and wires should always state the weight per square foot or the thickness in thousandths of an inch.

Three-Wire Measurement of Pitch Diameter of Screw Threads

Various methods of measuring the pitch diameter of a thread, such as thread micrometers, ball point micrometers and with three wires, are commonly employed. Of the various methods which have been tried, the three-wire method has been found to be the most accurate and satisfactory when properly carried out.

Following are the formulas for use with Screw Thread Micrometer Calipers and the Three-wire System.

60° Sharp V or U. S. Standard Form.

D = Outside diameter of screw.

N = Number of threads per inch.

$$P = \text{Pitch of thread} \dots \dots \dots = \frac{1.000}{N}$$

$$S = \text{Single depth of V thread} \dots \dots \dots = \frac{.8660}{N}$$

$$S = \text{Single depth of U. S. Std. thread} \dots \dots \dots = \frac{.6495}{N}$$

$$D' = \text{Pitch diameter of thread} \dots \dots \dots = D - S$$

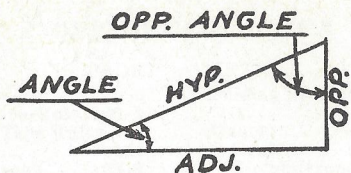
$$WD = \text{Wire diameter} \dots \dots \dots = P \times .57735$$

$$DW = \text{Diameter over wire} \dots \dots \dots = (D - S) + (.86602 \times P)$$

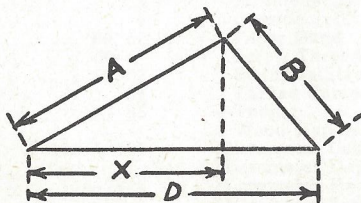
When selecting Wire other than correct size touching on pitch line, it should be the nearest size larger, using the following formula:

$$DW = (WD \times 3) - (P \times .866025) + D'$$

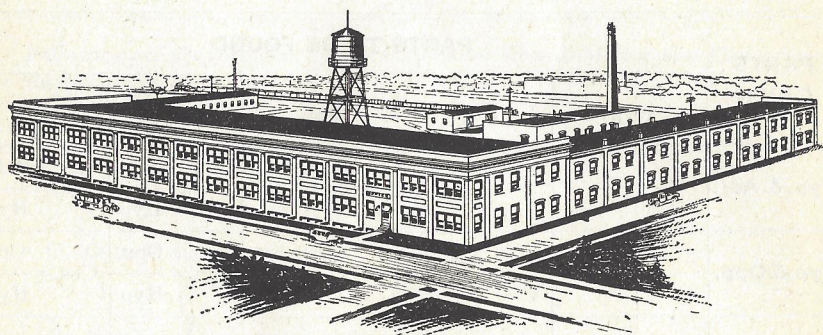
Table for Solving Right Angled Triangles



PARTS GIVEN	PARTS TO BE FOUND				
	Hyp.	Adj.	Opp.	Angle	Opp. Angle
Hyp. & Adj.	_____	_____	$\sqrt{\text{Hyp.}^2 - \text{Adj.}^2}$	$\text{Cos.} = \frac{\text{Adj.}}{\text{Hyp.}}$	$\text{Sin.} = \frac{\text{Adj.}}{\text{Hyp.}}$
Hyp. & Opp.	_____	$\sqrt{\text{Hyp.}^2 - \text{Opp.}^2}$	_____	$\text{Sin.} = \frac{\text{Opp.}}{\text{Hyp.}}$	$\text{Cos.} = \frac{\text{Opp.}}{\text{Hyp.}}$
Hyp. & Angle	_____	Hyp. x Cos.	Hyp. x Sin.	_____	90°-Angle
Adj. & Opp.	$\sqrt{\text{Adj.}^2 + \text{Opp.}^2}$	_____	_____	$\text{Tan.} = \frac{\text{Opp.}}{\text{Adj.}}$	$\text{Cot.} = \frac{\text{Opp.}}{\text{Adj.}}$
Adj. & Angle	$\frac{\text{Adj.}}{\text{Cos.}}$	_____	Adj. x Tan.	_____	90°-Angle
Opp. & Angle	$\frac{\text{Opp.}}{\text{Sin.}}$	Opp. x Cot.	_____	_____	90°-Angle



When A, B & D
Are Given
$$X = \frac{D^2 + A^2 - B^2}{2D}$$



Factory and Office

THE LUFKIN RULE CO. OF CANADA, LTD.
WINDSOR, ONT.

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